5,041/B/1

S
20/6/06
55

51. C. 75/4

Digitized by the Internet Archive
in 2018 with funding from
Wellcome Library

https://archive.org/details/b30537708_0001

5743

A

PRACTICAL TREATISE on WOUNDS and other *CHIRURGICAL SUBJECTS;*

to which is prefixed

a ſhort HISTORICAL ACCOUNT of the riſe and progreſs of

SURGERY AND ANATOMY,

addreſsed to YOUNG SURGEONS,

By BENJAMIN GOOCH

SURGEON.

VOL. I.

Homines ad Deos nulla re propiùs accedunt, quàm ſalutem hominibus dando. CICERO.

NORWICH,

printed for the AUTHOR,

by W. CHASE and ſold by him,

and the Bookſellers in LONDON.

MDCCLXVII.

WELLCOME
HISTORICAL
MEDICAL
LIBRARY

49429
33

THE CONTENTS.

Page

THE introduction, containing the rise and progress of Surgery 1

The rise, progress and present state of Anatomy 19

Division of this treatise, the definition and difference of wounds 63

Appearances of a simple wound through every state, till it is perfectly healed 69

Of a wound in a small artery 73

——— *a large artery* 76

Of the different species of aneurysms 84

Of wounds in the veins, lymphatics, glands, nerves, tendons, membranes and ligaments 87

Of the prognosis in wounds 94

Of

Page

Of mortal wounds 96

Of ſuch wounds as may prove mortal when left to themſelves, admitting of cure by proper treatment 119

The method of drawing prognoſtics in wounds 126

Of the different intentions in the cure of wounds, and how they are to be anſwered 130

Of bandages applicable to wounds 146

Of ſutures 150

Of curing wounds in the arteries 161

Of ſtyptics, fungous ſubſtances, &c. 165

Of the treatment of aneuryſms 179

Of the treatment of wounds of the veins, lymphatics, nerves, tendons, &c. 188

Of poiſoned wounds, venomous bites, &c. 197

Of the accidents belonging to wounds 200

Of the extraction of extraneous bodies 208

Of the non-naturals 219

PART

PART II.

Page

Of wounds and other injuries incident to the head and Encephalon 234

Of trepanning 298

Of fungoſities apt to ariſe after trepanning, and the method of prevention 315

Of tumors on the heads of new-born children 322

Of wounds of the forehead, face, neck, &c. 327

Of wounds of the Thorax *and its contents* 344

——— Abdomen *and its contents* 375

——— *Parts in the* Pelvis 418

——— Scrotum, Teſtes, Penis, &c. 426

——— Extremities 434

Of the Sacculi mucoſi 437

Of gun-ſhot wounds 441

Of burns 447

The method of opening a dead body 450

Of embalming dead bodies 456

As

As the Author's indiſpoſition prevented his attending the preſs, he begs the Reader wou'd firſt correct the typographical errors with his pen, both in this and the other volume.

Page 6 l. 4 del. comma after *Alexander*; and alſo after *Guido* P. 10 l. 7—P. 11 l. 3 put there for their—P. 13 l. 1 La for Le before *Peyronie*.—P. 23 l. 21 put a comma after *Byzantinus*—P. 35 l. 6 del. comma after admirer—P. 38 laſt line *Pruſa* for *Pruſia*—At bottom of P. 40 add this note [Read Biſhop *Atterbury's* beautiful diſſertation upon *Antonius Muſa's* character, repreſented by *Virgil* in the perſon of *Japis*.]—P. 42 l. 21 write *Eclectic* for *Elective*; the ſame in note, and in P. 43 l. 5—P. 58 laſt line with for was—P. 64 l. 16 del. comma after is; the ſame P. 85 l. 1 after or, and after conſiderable in P. 86 l. 1—P. 87 l. 10 add s to become—P. 101, l. 11, del. comma after Stalpart.—P. 105 l. 2 add apoſtrophe to weapon's ——P. 111 in note write *Larynx*——P. 114 l. 13 hereafter; and in note put *La* before *Faye* inſtead of *Le*, and del. comma between *Stalpart* and *Vander*—P. 119 in marginal note, a c too much in *Viſcera*———P. 133, l. 8, laſt word, Syſſarceſis.———P. 140 l. 19 firſt ſyllable wanting in particular; and in note there the characters ſhou'd be ℨ—P. 192 catch-word, Authors—P. 207 l. 7 del. s in convulſions—P. 262 l. 15 add s to application—P. 295 to third marginal note write ſame after the—P. 296 in marginal note, *Currus triumphalis* ———P. 307, l. 19, way for away.———P. 322 write *Magatus* inſtead of *Magetus*———P. 334 *Ætius* for *Oetius*—P. 341 l. 1 of note 2d del. point after *Van*——P. 355 laſt line, del. Apoſtrophe over Gendarme's—P. 358, l. 6, vol. 2, Houſtet's for Honſtet's———P. 365 in marginal note, put 108 for 110—P. 384 l. 25 del. s in *intoſtines*—P. 385 l. 21 add s to protrude—P. 388 in note, write *Epanchements* for *Epenchemens*—P. 400 add letter of reference at the end of firſt paragraph—P. 401 for 410—P. 428 l. 18 *proſtate* inſtead of *proſtrate*.

N. B. Whereſoever my Obſervations, or Caſes and Remarks in Surgery are referred to, or occur in the following Treatiſe, the ſame is meant, and are to be underſtood as ſynonimous terms.

TO

Young Surgeons.

GENTLEMEN,

I OFFER theſe papers to you, from a deſire of being as uſeful as I can in my profeſſion. They are founded upon the lectures of the moſt eminent Profeſſors, the practice of the Hoſpitals, and the ableſt Surgeons at home and abroad; and contain the ſentiments of the Ancients and Moderns: among which are interſperſed obſervations, practical remarks, and ſuch reflections as my own experience and diligent attention for full forty years, have furniſhed me with.

I WILL not doubt of your favourable acceptance of this *Opuſculum*, nor of your candid interpretation of the quotations, which are

made

made with a desire of raising in your minds a spirit of emulation, and inciting you to consult those distinguished Writers I am indebted to, who will more amply reward your inquiries.——When I was a young man I wished for a plain, methodical guide upon this subject; and if what I have written shall afford you any assistance in your studies and pursuits, my endeavours will be fully recompensed.

By beginning early to make observations, taking minutes of extraordinary occurrences in practice, and making them occasionally the subjects of reflection, you will receive great advantages. From such rational experience, you may expect to acquire a requisite degree of confidence in yourselves, animating you to proceed in your business with proper resolution and steadiness, to accomplish the several ends you may have in view.

Pursue, with zeal and perseverance, the steps that lead to knowledge and understanding in your profession, to support the credit

credit and dignity of Surgery, for your own honor and the public good; in which I wiſh you all imaginable ſucceſs, and am,

GENTLEMEN,

Your faithful and affectionate

Friend and Servant,

NORWICH,
Jan. the 1ſt, 1766.

B. Gooch.

The following extracts are from the preface to an abridged tranſlation of the preliminary diſcourſe to the 1ſt vol. of the *Mem. de l'Acad. Roy. de Chirurgie*, printed in the year 1760, for *Wilſon* and *Durham*.

" Thoſe who intend bringing up their children in " Surgery, ſhou'd give them as much preparatory " education, as if they deſign'd them for the Univerſi- " ty: alſo the French tongue, the mathematics, eſpe- " cially mechanics, drawing and ſtenography, if not " abſolutely neceſſary, are very uſeful accompliſhments " for a Surgeon, and they certainly will be found ſo " upon many occaſions, in the purſuit of his ſtudies; " a competent knowledge of which may be eaſily ob- " tained by an early and proper application.

" Thoſe of a ſuitable genius and thus qualified, " who ſhall be put apprentices, even in the Country, " to able and inſtructive maſters, afterwards attending " aſſiduouſly in *London* to Anatomy, Surgery, Expe-

" rimental

" rimental Philoſophy, &c, may become ornaments " in their profeſſion, and may be enabled, by theſe " means, to expreſs and conduct themſelves in ſuch " a manner, as will effectually recommend them to " the world, and ſupport the character and dignity of " an art that has been highly honoured in all ages."

" As the ſymptoms of latent diſeaſes are often very " equivocal, the diligent obſervance and minuting of " them down before the death of the patient, and the " accurate inſpection of the body after, might greatly " improve the *diagnoſtic* and *prognoſtic* part of the me- " dical art: and in proceſs of time, by theſe meaſures, " perhaps better *criterions* might be eſtabliſhed to di- " rect the judgment in the curative indications; or " when it happens that the diſeaſe is incurable in its " nature, it is not a little to the honour of the Phyſician " or Surgeon to be able to preſage the event of it; yet " opportunities of making remarks and obſervations, " in this uſeful and inſtructive manner, can ſeldom be " had but in Hoſpitals."

That diſcourſe, which was written by Doctor *Queſnay*, an excellent French Writer, has been much admired; and indeed I think it deſerves an attentive peruſal better than any thing I have ſeen upon the ſubject.

THE

INTRODUCTION.

Of what the medical art conſiſts.

THE medical art is compriſed under theſe three general heads; *Phyſiology*, *Pathology* and *Therapeutics*, or the method of curing diſeaſes, conſiſting of diet, medicine, and manual operation; the latter of which is the province, that falls peculiarly to the Surgeon's ſhare.

The diviſion of Surgery.

WRITERS have divided Surgery into theſe ſix branches. *Syntheſis*; *Diæreſis*; *Exæreſis*; *Aphæreſis*; *Proſtheſis*; and *Diorthoſis*: the firſt ſignifies uniting parts divided: the ſecond dividing parts united: the third removing or extracting extraneous or other noxious ſubſtances, lodged in any part of the body: the fourth taking away what is ſuperfluous: the fifth ſupplying deficiency: the ſixth reſtoring parts to their proper places.

The excellency rise and progress of surgery.

THE daily instances of the relief which surgery brings the afflicted, under the various circumstances of distress, even delivering them from the jaws of death, sufficiently proclaim it's excellence; and it appears to be of much earlier date, than the other parts of the medical art.

WE see by the *antediluvian* history, that soon after the creation of the world, feuds and animosities, envy and malice possessed the minds of men, productive of rapine and war, which inevitably exposed the contending parties to wounds, and other external injuries.—Reason, implanted in man for his preservation, as the first principle in nature, directed him, on various occasions, to seek a remedy; and this necessity gave rise to surgery, which at first was rude and imperfect, gradually growing, in successive ages, like other ingenious arts and sciences, to a state of perfection.

Simple food, temperance and pure air prevent diseases and prolong life.

THE inhabitants of the earth, in the primitive ages of the world, lived frugally upon plain simple food, according to the dictates of nature and right reason; and, enjoying

enjoying a pure ſerene air, their lives were protracted to a great length, without being ſo ſubject as we are to diſeaſes, which have been much increaſed ſince that time by luxury and intemperance. They were peculiarly happy in the enjoyment of robuſt and vigorous conſtitutions, raiſed from good original ſtamina; and when attacked with diſeaſes, nature wanted little or no aſſiſtance from art, to reſtore their health; conſequently ſurgery was then looked upon, as almoſt the only neceſſary branch of medicine. *a*

Of Æſculapius, his birth and education.

ANCIENT hiſtory informs us, tho' there may be ſomething fabulous and allegorical in it, that *Apollo* communicated his ſkill in this ſcience to his ſon *Æſculapius*, who then profited under the tuition of *Chiron* the Centaur; and for his great improvement and knowledge of it, ſurgery in particular, he was deified, and had temples dedicated to him in ſeveral parts of the world. Many countries contended for the honor of his birth, and according to the learned,

(a) Vid. diſſertat. phyſico-med. Fred. Hoffmanni de methodo acquirendi vitam longam.

his name ſignifies a man of the knife, in the *Phenician* language, whence ſome writers conclude he was a native of *Phenicia*; but this controverted point, whether he was by birth a *Phenician*, an *Egyptian*, or a *Grecian*, is not material to our purpoſe.

No regular profeſſors of medicine in the early ages of antiquity.

In thoſe early days there were no regular profeſſors of the medical art, the knowledge of which was then conveyed by oral tradition, or recorded upon pillars in the moſt public places, or on the walls of temples, dedicated to the God of health; and afterwards regiſters of cures were kept in thoſe conſecrated places, for the general good of mankind.

Of Machaon and Podalirius.

Machaon and *Podalirius*, the ſons of *Æſculapius*, were both medical and military men, and being particularly ſkillful in ſurgery, they proved very uſeful to the ſoldiers in curing their wounds, in the *Trojan* war; on which account, when *Machaon* himſelf was dangerouſly wounded with a dart, greater lamentation was made for him than for any other Hero.

At what period of time the Aſclepiades were the only famous profeſſors of the medical art.

FROM the deſtruction of *Troy* to the *Peloponneſian* war, which was an interval of more than ſeven hundred Years, the *Aſclepiades*, deſcendents of *Æſculapius*, and their diſciples, were the only noted profeſſors of the healing art.

Of Hippocrates.

About the concluſion of this period of time, the immortal *Hippocrates* began to be famous in the world, who was alſo of the *Æſculapian* family, and lived between four and five hundred years before our *Saviour*. He was endowed with the greateſt ſagacity, excelled all his predeceſſors and cotemporaries, and reduced this ſcience into better order, compiling and laying down for poſterity, rules founded upon his own obſervations, confirmed by experience, and was deſervedly called the father of phyſic. In his writings he alſo treats of wounds, ulcers, fractures, *&c.* interſperſing obſervations and remarks through the whole, to direct the judgment and practice of ſucceeding ages. He was the ableſt Surgeon, as well as Phyſician, of his time.

The Greek Phyſicians who treated profeſsedly of Surgery in their writings.

THE other greek Phyſicians, whoſe writings have been tranſmitted to us in a more univerſal language, treating alſo profeſſedly of ſurgery, are *Oribaſius*, *Alexander*, *Trallianus*, *Ætius* and *Paulus Ægineta*, and the great *Galen*, who flouriſhed more than a century before *Oribaſius*. *a*

Of Celſus.

AMONG the Romans, *Celſus*, a man of a ſublime and penetrating genius, is the only author we have in his time, tho' he mentions ſeveral; but there is no other record or monument of them left. Both he and *Galen*, who was a practitioner of great repute at *Rome*, tho' a native of *Pergamus* in *Aſia* minor, ſpeak of ſome ancient Surgeons, as well in *Egypt* as in other parts of the world, whoſe works have periſhed.

Galen practiſed at Rome more than a century after Celſus.

When Alexandria became a famous Univerſity for phyſic, &c.

WHEN the knowledge of arts and ſciences was transfered from *Egypt* to *Greece*, it received

a Oribaſius was a practitioner of great note at Sardis, in Cent. IV. Æ. C.—What he has ſaid, de laqueis et Machinamentis, in his voluminous works, is chiefly taken from Heliodorus.—It appears that Paulus was a more conſiderable Surgeon, having improved upon his predeceſſors.

received great improvements, and *Athens* was looked upon as the ſeat of all kinds of learning, till the death of *Alexander* the Great; after which *Æra* the *Ptolemies* ruled in *Egypt*, and *Alexandria* became the moſt renowned ſchool in the world, for Phyſic, Surgery and Anatomy, which flouriſhed near a thouſand years: and in thoſe days, Phyſicians boaſted of receiving their education in that Univerſity. Then the different branches of medicine were practiſed together, and not ſeparated till the time of *Herophilus* and *Eraſiſtratus*, who were educated at *Alexandria*, and lived in the reign of *Seleucus Nicanor*, King of *Syria*, as appears by a memorable incident, in reſpect to the latter of thoſe illuſtrious men, who ſhewed his great penetration, in diſcovering *Antiochus's* diſtemper, when fallen deſperately in love with his mother in Law, the young and beautiful *Stratonice*, *Seleucus's* ſecond wife, that he had married in his old age. [a]

When the different branches of the medical art were ſeparated.

A memorable inſtance of Eraſiſtratus's ſagacity.

In

[a] Seleucus began his reign Ao. Mdi. 3684. Eraſiſtratus reſided at his Court and was Archiater.

When Alexandria was taken by the Saracens.

In the year 640 of the Chriſtian *Æra*, the Caliph of the *Saracens*, profeſſed enemies to literature, as well as to the Chriſtians, took *Alexandria*, deſtroyed the Univerſity, and burnt the library of *Ptolemy Philadelphus*, which was the greateſt magazine of learning in the world, ſaid to contain 700,000 volumes; however ſome books might be ſaved out of that lamentable conflagration.

The irruption of the Goths and Vandals.

In the ſame century, that this dreadful cataſtrophe happened at *Alexandria*, *Europe* was over-run with *Goths* and *Vandals*, by which calamitous event, the liberal arts and ſciences alſo ſuffered very much; and undoubtedly medicine ſhared the ſame fate.

When the Arabians made the moſt conſiderable figure in the medical art.

After the fall of *Alexandria*, and the irruptions of thoſe barbarous people, the *Arabians*, having collected libraries, and probably poſſeſſed themſelves of ſome books, that were ſaved out of the flames at *Alexandria*, became more conſpicuous and conſiderable in this ſcience, than any other nation; of which, the moſt eminent who blended ſurgery with their other

other medical writings, were *Rhazes Avicenna*, *Avenzoar*, *Averrhoes*, and *Albucaſis*. Theſe *Arabians* were favourers of *Galen*'s doctrine, and their authority prevailed unrivalled for many ages.

Oppoſition of the Chemiſts to the Galeniſts.

AFTERWARDS the Chemiſts oppoſed the *Galeniſts*, each of which had zealous partiſans, who were bigotted to the opinions of their chiefs, and combated each others notions with great vehemence, whence a kind of ſchiſm aroſe in the province of phyſic; but the wiſer moderns have freed themſelves from implicit faith, and the embarraſſments of hypotheſes, and fine ſpeculative ſyſtems, more curious than uſeful, regarding only what is founded upon rational experience, to which theory muſt be ſubordinate.

Speculative notions inconſiſtent with orthodoxy in phyſic.

When learning began to dawn, after long obſcurity.

IN the 13th century learning emerged from the dark clouds of ignorance, under which it had long been veiled; and about this period of time, the reformation of ſurgery was begun in *England* by *Ardern*, *a* originally a practitioner of great fame at *Newark*

At what time the reformation of ſurgery began in England and France.

a Vid. Opera I. Friend, M. D. de Hiſtoria Medicinæ.

Newark, and afterwards in *London*: and it was begun rather earlier in *France*, by *Pitard* and *Lanfranc*.[a] By a ſucceſſion of men of genius, learning and application here, ſuch as *Gale*, *Clowes*, *Woodall*, *Baniſter*, *Wiſeman* and many others, and there, by *Vavaſſeur*, *Mondeville*, *Guido*, de *Cauliaco*, *Paré*, *Guillemeau*, &c. ſurgery was gradually advanced, in both Countries, to it's preſent ſtate of perfection. *Pitard* was a Pariſian by birth, but *Lanfranc* was a native of *Milan*, educated at *Salernum*, the moſt famous Univerſity for Phyſic and Surgery in thoſe days, as it's motto, *Civitas Hippocratica*, emphatically expreſſes. He was driven from *Italy*, with many other learned men, by the dreadful factions of the *Guelphs* and *Gibelines*, at the concluſion of the 12th Century, and found an Aſylum at *Paris*, where he met with a very honourable reception. His acquaintance with *Pitard* was ſoon improved into a ſtrict friendſhip, which was inviolably preſerved, for the public good, between theſe eminent men, who, co-operating, ſupported with great credit and dignity, the College of St. *Côme*

Learned men forced to fly from Italy on account of public commotions.

The origin and nature of the inſtitution of the College at St. Côme.

a See Hiſtoire de L'Origine & des progres de la Chirurgie en France.

Côme, founded by *Lewis* the ninth, who was ſainted for engaging in the Croiſade; and their public lectures were appointed to be read, and demonſtrations made, in Anatomy and Surgery, by the Royal Founder. *Pitard*, having given early proofs of his extraordinary talents and abilities in his profeſſion, was honoured, before he was thirty years of age, with the appointment of firſt Surgeon to the King, and ſtanding in the higheſt eſteem, attended him in his expedition to the *Holy-Land*, where he gathered laurels and returned loaden with honors.

Advantages the French have had ſuperior to us.

Our neighbours having had for ſome ages, better opportunites from royal patronage, of acquiring knowledge in their profeſſion, than other Countries, and being regular in giving lectures, and making demonſtrations in Anatomy and Surgery, they diſtinguiſhed themſelves, and were deſervedly extolled throughout *Europe*: and from every part of it, Surgeons uſed to reſort to *Paris*, to complete their education, which now can no longer claim the ſuperiority to *London*, only in reſpect to the Royal

Royal Academy of Surgery, a late inſtitution, truly worthy of a great prince, having the general good of his people, and the glory of his country at heart.—Were the propriety and utility of ſuch an eſtabliſhment repreſented, in it's true light, to his moſt Auguſt Majeſty, the King of *Great-Britain*, it is highly probable he would be graciouſly pleaſed, to give all due encouragement and ſanction, to ſuch a beneficial foundation in his Metropolis.

Surgery adopted in foreign Univerſities.

In the foreign Univerſities, the profeſſors of Phyſic generally adopted Surgery; and now, at the famous Univerſity of *Edinburgh*, and others, there are profeſſorſhips appropriated to Surgery and Anatomy conjointly. *Marianus Sanctus*, a celebrated Lithotomiſt, was a Doctor of *Padua*. *Marcus Aurelius Severinus*, *Vigo*, *Fabricius ab Aquapendente*, *Cæſar Magatus*, *Marchetti*, and many other practical Surgeons, that might be enumerated, were Doctors of Phyſic. Monſ. *Le Cat* at *Rouen*, and Monſ. *Pouteau* at *Lyons*, chief Surgeons to the great Hoſpitals in thoſe Cities, are ſtyled Doctors of Phyſic and Surgery. The late

late illuſtrious M. *De Le Peyronie*, who was firſt Surgeon to the King, and to whom the whole faculty is greatly indebted, was bred, and took a Doctor's degree, in the Univerſity of *Montpelier*. Some of the Phyſicians to the Kings of *France* were originally Surgeons, in which country ſingular marks of royal favour have, for many ages, been conferred upon Surgeons, as we have obſerved; and by a late edict, upon the eſtabliſhment of the Royal Academy of Surgery at *Paris*, no Surgeon is allowed to practiſe, and be maſter of his Company, without having taken a maſter of arts degree in ſome Univerſity of that Kingdom. The great *Fabritius Hildanus*, who flouriſhed in the 15 century at *Bern* in *Switzerland*, was Phyſician and Surgeon in ordinary to that illuſtrious Republic, and to the Marquis of *Baden*. He ſtands at the head of the firſt claſs of obſervators, and ſhould be in the hands of every practitioner.

Surgeons in Paris obliged to take a degree of M. A.

Though in a ſtrict and limited ſenſe, the art of ſurgery is conſidered, only as a methodical application of the hand and inſtruments, and Phyſic and Surgery are now diſtinct

Phyſic and Surgery ſo connected as not to be ſeparated

distinct professions, yet the latter, having for it's objects of attention all external disorders, it is absolutely necessary for the Surgeon, to be acquainted with the laws of the animal Œconomy, and every thing relative to the medical art, to acquit himself the more properly in his department: and a good knowledge, in the rules and theory of Surgery, is no inconsiderable addition to the character of the regular Physician, to whom all due deference shou'd be paid, without servility. In the very nature of things, both branches of medicine are so connected, that they cannot be separated without manifest injury, according to the sentiments of *Celsus*, who says; "*Omnes medicinæ* "*partes ita connexæ sunt, ut ex toto se-* "*parari non possunt.*" In another place he delivers himself thus; "*Ego eundem* "*quidem hominem posse omnia ista præstare* "*concipio; atque ubi se diviserunt eum* "*laudo qui quamplurimum percipit.*" Lanfranc says. "*Ne peut etre bon Medecin s'il* "*n'est Chirurgien, & nul n'est bon Chirurgien* "*s'il n'est Medecin.*" Influenced by these authorities

In respect to the animal Œconomy, Baron Haller's Primæ Lineæ Physiologicæ may be read.

authorities and conſiderations, I ſhall not confine myſelf, in the following treatiſe, to manual operation and topical remedies only; but give ſome general inſtructions, in reſpect to regimen and internal medicines, as far as it appears eſſentially neceſſary, for the practitioner's own ſatisfaction and his patient's beneſit, as the Surgeon cannot always have the advice and aſſiſtance of the regular Phyſician, when he ſtands in need of ſuch advantages, either from diſtance of ſituation, or other circumſtances.

Requiſite qualifications for a Surgeon.

HENCE we ſee how requiſite it is for a Surgeon, to make himſelf as well acquainted, as he poſſibly can, with every part of the medical art; more eſpecially with Anatomy, in order to fulfil the duty of his profeſſion; and in *London* now no opportunities are wanting to favour all ſuch purſuits. Beſides theſe qualifications, and thoſe recommended by *Celſus*, as a ſtrong, ſteady hand, a clear ſight, with calmneſs and fortitude of mind, *&c.* it is incumbent upon the Surgeon

Baron Van Swieten's Commentaries upon Boerhaave's Aphoriſms, furniſh us with a plentiful ſtock of uſeful knowledge, in the theory and practice of phyſic and ſurgery, and ſhou'd be read with the utmoſt attention.

Surgeon, to weigh well and conſider circumſtances and incidents, that may poſſibly occur, in any conſiderable operation he is about to perform, that he may not be diſconcerted, ſhould any thing extraordinary happen in it. It is alſo a matter of no ſmall conſideration, to engage the patient's confidence in us, by ſhewing him the reaſonableneſs and propriety of what we propoſe for his cure or relief: and we ſhou'd endeavour to ingratiate ourſelves into his favor and opinion of us, by all the demonſtrations of tenderneſs and humanity the nature and circumſtances of the caſe will allow, which conduct will the moſt effectually compoſe and ſettle his mind, enabling him to bear, with the greater patience and reſignation, whatever he muſt unavoidably ſuffer.

Things eſſentially neceſſary to be well attended to, before we undertake a cure of any conſequence.

BEFORE we undertake the cure of a diſeaſe, by manual operation, or otherwiſe, it is neceſſary to be thoroughly acquainted with it, and to have a due regard to the patient's age, ſex, conſtitution, cuſtomary way of life, and diſpoſition of mind. We muſt particularly inquire into the ſource of

of the diſtemper, conſider it's nature, the part affected, the effects it has produced, and the probable event, with every other circumſtance to direct our judgment: and, after having fully poſſeſſed ourſelves of the *Diagnoſtics* of the diſeaſe, we are to proceed to the prognoſtics, with great care and circumſpection, as it is a very nice point to manage, both in reſpect to the patient, and our own reputation. Laſtly we are to put in practice the eaſieſt, ſafeſt, and moſt expeditious method of cure, remembering, by all means, that when an operation is judged expedient, due preparation before, with great care and attention after it, is as eſſentially neceſſary to ſecure its ſucceſs as performing it well. The Surgeon ſhou'd ſtudiouſly avoid being in a hurry, in any operation; for by endeavouring to gain the character of a dexterous operator, he may, thro' quickneſs, cut parts that ought not to be touched, or omit doing what ought to be done. This rule of a very wiſe profeſſor, deſervedly held in the higheſt eſteem, ſhould ever be born in mind. "*Sat cito, ſi ſat bene*," which is applicable to all operations in Surgery; the

excellence, or gracefulneſs of performing them, not conſiſting in the greateſt quickneſs altogether : and there is ſcarce any accident, or difficulty, that can happen, which may not be overcome, when the operator is maſter enough of himſelf to preſerve a compoſure and preſence of mind ; but when the contrary is the caſe, and the mind is diſconcerted, the hand in courſe will ſhake and the judgment falter ; which unlucky circumſtances, when obſerved, may greatly prejudice the reputation of an able Surgeon.

OF THE

RISE, PROGRESS, and preſent STATE

OF

ANATOMY.

AFTER having written the introduction, and following treatiſe, ſome reaſons occurred to my mind, which upon imparting to my friends, induced them to think with me, that, before entering upon our ſubject, a tranſient view of the riſe and progreſs of Anatomy alſo, with a ſhort hiſtorical account and character of ſome of the moſt conſpicuous men, ſucceſſively concerned in the advancement of that ſcience, might not prove unacceptable, or quite an unprofitable amuſement, to the young Gentlemen, for whoſe ſake I adventure to write. Indeed Anatomy is ſo cloſely connected with the profeſſion of Surgery, and ſo fundamentally neceſſary to be underſtood, that no exhortation or incentive, can be really wanting, to enforce an early and

Reaſons for writing this brief hiſtory of Anatomy.

aſſiduous application to this moſt entertaining part of natural philoſophy, ſuperior to every branch of it, for dignity of ſubject and utility to mankind.

NOT to interrupt the order of this abſtract hiſtory of Anatomy, I ſhall be obliged to repeat ſome incidents and circumſtances that have been before mentioned in the introduction.

Riſe of Anatomy.

AS We have already obſerved in the introduction, bloodſhed and wars were early practiſed in the world; conſequently Surgery was coëval with it's neceſſity, and hence we may reaſonably infer, that thoſe who were converſant in curing wounds, and other external injuries, ſoon made ſome uſeful anatomical diſcoveries and remarks, there being in the mind of man a ſtrong propenſity and inquiſitiveneſs, to improve his knowledge in all things neceſſary to life, more eſpecially thoſe of ſuch importance, as tend directly to his own preſervation, and very exiſtence.

Embalming dead bodies early practiſed by the Egyptians.

As the practice of embalming dead bodies was much in uſe among the *Egyptians*, (*a*) it is no unreaſonable ſuppoſition, that thoſe who exerciſed this art might make ſome anatomical remarks, applicable to Surgery, even before the *Greeks* were renowned for their ſkill in arts and ſciences, for which they were originally indebted to the *Egyptians*: and upon the authority of *Pliny*, we may ſay opening dead bodies was ſometimes practiſed in *Egypt*, and even encouraged there by the wiſeſt Kings and Princes, in order to inveſtigate the nature and cauſe of diſeaſes and death. (*b*)

Of Æſculapius. He lived in the 28 Cent. from the creation of the world

We ſhall begin with *Æſculapius*, whom Hiſtorians ſay, as we have related before, was the ſon of *Apollo*, and had *Chiron* for his maſter, a great Philoſopher in thoſe days, well ſkilled in the ſciences, and the medical art, who dwelt upon mount *Pælion* in *Theſſaly*, where the great men uſed to reſort

(*a*) Vid. Diodor. Sicul.

(*b*) See Rider's notes upon the laſt Chapter of Geneſis, relating to the ancient manner of embalming among the Egyptians.

ſort to him for inſtruction, according to *Clemens Alexandrinus*. *Galen* ſays *Æſculapius* much improved the medical art, particularly Surgery, or the treatment of external diſorders, which was then in the greateſt eſteem, as it's uſefulneſs came more immediately under the evidence of the ſenſes; and undoubtedly he acquired ſome practical knowledge in Anatomy, tho' there were no regular profeſſors of that ſcience in his time. For his reputed great ſkill in his profeſſion, he was deified, and had temples conſecrated to him at *Epidaurus*, *Pergamus*, *Cos*, and other parts of the world, which were much frequented in thoſe days; and the prieſts, who had the ſuperintendence of theſe ſacred, oracular places, very well knew how to impoſe upon the credulous, to their own emolument and advantage. (a)

Machaon and Podalirius.

MACHAON and *Podalirius*, the ſons of *Æſculapius*, were celebrated for their ſuperior ſkill

(a) In the time of a raging peſtilence, the Romans having conſulted the Oracle of Apollo at Delphos, to know what they ſhou'd do in that calamity, fetched Æſculapius from Epidaurus where he was chiefly worſhiped: and on this occaſion he had a temple built by them, in an iſland near the mouth of the Tiber, and dedicated to him, as Ovid informs us.

ſkill in Surgery, when they attended the trojan war, under the conduct of *Agamemnon*, and conſequently they muſt have acquired ſome practical Anatomy. *Homer* himſelf, who has recorded their actions, as ſoldiers, as well as ſurgeons, was alſo a great Philoſopher, and appears to have been theoretically acquainted with Surgery and Anatomy, by his deſcriptions.

Machaon marries the King of Meſſenia's daughter.

Le *Clerc* ſays, (a) from *Pauſanias*, that *Machaon* married *Anticlea* the daughter of *Diocles*, King of *Meſſenia*, by whom he had two ſons, *Nicomachus* and *Gorgaſus*. They enjoyed their Grandfather's dominions, till they were expelled by the *Heraclides*, deſcendents of *Hercules*, who ſet up a prior claim, their progenitors having been Lords of *Peloponneſus*.

Podalirius eſpouſes King Damæthus's daughter, after his naufrage on the coaſt of Caria.

Podalirius, in his return from the trojan war, upon the authority of *Stephanus Byzantinus* was ſhipwrecked upon the coaſt of *Caria*, and preſerved by a Shepherd, who, underſtanding he was ſkilful in curing diſeaſes, carried him to King *Damæthus*

(a) Hiſtoire de la Medecine.

Damæthus, whoſe daughter he cured of a mischief received by a fall; which happy event highly pleaſed the King; and after he was acquainted with his hiſtory and extraction, he gave him his daughter in marriage, with the *Cherſoneſe* for her portion, where he built two Towns, calling the one *Syrna*, which was the name of his wife, and the other *Bybaſſus*, the name of the Shepherd who ſaved his life after his ſhipwreck. (a)

The Aſclepiades moſt diſtinguiſhed in the medical art, after the Trojan to the Peloponneſian war.

From the 28 to the 36 Cent.

FROM the concluſion of the Trojan, to the Peloponneſian war, an interval of more than ſeven hundred Years, the *Aſclepiades*, as we have before intimated, were almoſt the only people who diſtinguiſhed themſelves in the medical art. They eſtabliſhed ſchools for the ſtudy and improvement of this ſcience, in different parts of *Greece*, which ſpread the knowledge of it into diſtant Countries: and we are told, with good authority, that Anatomy was ſo peculiar an object of their notice and attention

(a) It is ſaid he cured the princeſs by bleeding on both arms; and that this is the firſt inſtance of the practice of phlebotomy which is to be met with.

tion, that they uſed to teach their children to diſſect brutes from their infancy.

Of Pythagoras. He lived in the 35 Cent.

THE native Country of *Pythagoras* is uncertain; ſome ſay he was a *Tyrian*, others a *Syrian*, and ſome that he was born at *Samos*. To increaſe his knowledge, he travelled into *Egypt*, to *Babylon*, *Chaldæa* and other parts of the world, famous for arts and ſciences, tho' now depopulated, and fallen from their ancient glorious ſtate, overwhelmed with barbariſm, and ſunk into abject ſlavery. At his return from his travels, he came to *Samos*, intending to make that City the place of his reſidence, but not being able to endure the tyranny of *Polycrates*, he fled from thence, and dwelt at *Crotona* in *Italy*, where he was the founder of a ſchool for the ſtudy of phyſic. He was the firſt that joined philoſophy to the ſtudy of that ſcience, a man of great abilities and application; and it appears, that Anatomy was not diſregarded by him. He flouriſhed in the Time of *Tarquin* the laſt King of *Rome*, became very illuſtrious by

his

his learning, virtue and perſuaſive eloquence, and died full of years and full of glory.

Empedocles.

EMPEDOCLES was one of *Pythagoras's* brighteſt ſcholars, a *Sicilian*, born at *Agrigentum*. He was an eminent Phyſician and Philoſopher, and underſtood Anatomy, and, I think, *Lucretius* mentions him both as a Poet and an Hiſtorian. There are various opinions concerning the manner of his death; ſome ſay, he threw himſelf into Mount *Etna*, others, that he was drowned in the ſea, but no valid authority appears to prove the truth of either of theſe cataſtrophes.

Alcmæon.

ALCMÆON was by birth a *Crotonian*, became a Phyſician of great name, and applied himſelf much to Anatomy; in his philoſophic principles he was a *Pythagorean*.

Democritus Abderites.

DEMOCRITUS was an eminent Phyſician, and one of the greateſt Philoſophers of antiquity. If *Abdera* in *Thrace* was not the place of his nativity, it was undoubtedly that of his reſidence. He had ſuch an inſatiable

ſatiable paſſion for learning, and all the ſciences, that he ſpent great part of his patrimony in purſuit of knowledge, incurring the cenſure of the ſtate for prodigality, on that account. He travelled into *Egypt*, *Perſia*, and the remoteſt parts of the earth, making himſelf acquainted, and conferring perſonally, with Philoſophers and Phyſicians, the Magi, Gymnoſophiſts, &c. renowned for learning in thoſe days. He diſſected brutes, in order to diſcover the ſeat of the bile; and in his Philoſophic notions was an Atomiſt and a Vacuiſt.

Hippocrates ſent for by the Abderans to cure Democritus of a ſuppoſed madneſs.

THE People of *Abdera* apprehended *Democritus* was grown mad, becauſe he delighted in retirement, and was always laughing at the follies and vanities of the world; but ſtill having the greateſt veneration for him, they ſent for *Hippocrates*, to come and cure him of the ſuppoſed inſanity of his mind. *Hippocrates* found him engaged in diſſecting brutes, and aſking him why he did ſo, he ſaid it was to diſcover the ſeat and nature of the bile, a predominance of which humor, he conceived was the cauſe of madneſs; which rational anſwer

Hippocrates's opinion of Democritus.

ſwer began to make *Hippocrates* think, thoſe who ſent for him wanted hellebore more than *Democritus*; and after having had a long conference with him, he was fully convinced of the ſanity of his mind, and declared him not only perfect in his intellectual faculties, but that he believed him to be one of the wiſeſt men in the world. In all probability, this interview laid the foundation of an inviolable friendſhip between theſe illuſtrious men, who held an epiſtolary correſpondence afterward. He lived to be more than 100 years old, and bore the misfortune of loſing his ſight ſome time before his death, like a divine Philoſopher.

Damocrates.

DAMOCRATES was an eminent Phyſician, and ſaid to have had the honor of being *Hippocrates*'s maſter in Anatomy; but he was ſoon excelled by his ſcholar.

Of Hippocrates; his birth and education.

HIPPOCRATES was born in the *Iſle* of *Cos*, about 30 years before the peloponneſian war, and between four and five hundred before Chriſt; and was educated at the ſchool, eſtabliſhed by the *Aſclepiades*, in the City of *Cos*, the Metropolis of that Iſland.

Iſland. He was the eighteenth in deſcent from *Æſculapius*; his father's name was *Heraclides*, and he was of as noble extraction by the mother's ſide, who was of the lineage of *Hercules*. Beſides the advantages he reaped by his father's early inſtruction, he was under the tuition of *Herodicus*, an eminent Phyſician, who firſt introduced gymnaſtics in the cure of diſeaſes, as well as in the prevention of them; *(a)* he was alſo pupil to *Gorgias*, brother to *Herodicus*, a famous Rhetorician and Philoſopher. This great Luminary eclipſed all that roſe before him; he wrote much upon the ſtructure of the human body, and was the greateſt Phyſician, Surgeon and Anatomiſt of his own time.

Herodicus and Gorgias, were his Tutors.

By whom Gymnaſtics were introduced in the cure of diſeaſes.

HIPPOCRATES's fame was ſo great, when the plague raged, and made dreadful devaſtation in *Perſia*, that *Artaxerxes* ſent for

Hippocrates ſent for by Artaxerxes when the plague raged in Perſia.

(a) The Perſians, the Greeks and the Romans wiſely inſtituted various kinds of games and bodily exerciſes, to ſtrengthen the conſtitution and prevent diſeaſes; as well as to render their people active and better fitted, by athletic exerciſes, for all martial exploits.

for him, in the moſt preſſing manner, to aſſiſt his diſtreſſed Country, offering to load him with riches and honors; but he refuſed to go, as he had done before to the *Illyrians*, in the ſame calamitous ſtate, tho' they alſo offered him the greateſt rewards, apprehending his own Country might want his aſſiſtance. He went himſelf to advertiſe the *Athenians* of what was to be feared, from his obſervations in reſpect to the winds, and other circumſtances, adviſing them what ſteps to take, in order to avert the impending danger.

Hyſtanes writes to him, by his maſter's command, in an imperious manner, and his anſwer.

WHEN *Hyſtanes*, Governor of the *Helleſpont*, wrote to *Hippocrates*, by his maſter's command, in an imperious ſtyle, promiſing him the greateſt rewards of riches and honor, to tempt him to go, he was much diſpleaſed, and anſwered in theſe terms.— "*Victu et veſtitu, & domo, & omni ad vitam ſufficienti opulentia fruimur; Perſarum autem divitüs uti, fas mihi non eſt: neque barbaros homines a morbis liberare, qui hoſtes ſunt Græcorum.*" This anſwer incenſed the King ſo much, that

that he denounced utter ruin and deſtruction to the people of *Cos*, and that he wou'd lay their Country waſte, if they countenanced ſuch inſolence; but thoſe brave and generous *Iſlanders*, replied with a becoming ſpirit and reſolution, to the menaces of that mighty earthly prince, who haughtily ſtyled himſelf King of Kings, declaring they wou'd protect ſo worthy a citizen, and ſo virtuous a man, and not deliver him up to his chaſtiſement, let what would be the conſequence of his reſentment.

Hippocrates ſignally honoured by the Athenian Senate.

FROM a juſt ſenſe of his probity and integrity, his unſhaken conſtancy, his attachment and love to his country, and the *Greeks* in general, in reſiſting ſuch powerful temptations; and in conſideration of the regard he had paid to the *Athenians* in particular, the Senate decreed that he ſhou'd be preſented with a golden crown, and have all the honors, that *Athens* cou'd give, conferred upon him: And for his ſake, the youth of the Iſle of *Cos* were invited to receive their education at *Athens*, with the youth of that Univerſity, then in it's flouriſhing ſtate, and diſtinguiſhed throughout the world, for being

being the ſeat of the liberal arts and ſciences, and all polite literature; now miſerably changed to ignorance and barbariſm. Strange viciſſitudes in all ſublunary things!—The perfections, and eminent virtues of this venerable man conſecrated him to immortality, and placed him among the Divinities.

Theſſalus and Draco, Sons of Hippocrates. Cent 36.

HIPPOCRATES left two ſons, *Theſſalus* and *Draco*, who followed the profeſſion of their father, but fell far ſhort of his reputation and excellence. *Theſſalus*, the elder of them, was moſt known in the world, and ſpent the greateſt part of his life in the Court of *Archelaus* King of *Macedonia*. There is an oration of his to the *Athenians*, at the end of the works of *Hippocrates*. Nothing memorable appears of *Draco*, only that his ſon of his Grandfather's name, was Phyſician to *Roxana Alexander*'s favourite miſtreſs.

Polybius.

POLYBIUS was one of *Hippocrates*'s moſt celebrated diſciples, and married his daughter. After the death of his Father-in-Law, he undertook the inſtruction of his pupils; and

and acquired great reputation in his profeſſion.

PLATO, called the divine Philoſopher, was a great Metaphyſician, and chief of the Academics. He followed the ſteps of his predeceſſors, joining philoſophy to phyſic. His notions concerning the ſpinal marrow, the brain, the heart, the action of reſpiration, &c. entitled him to be claſſed among the Anatomiſts. Plato.

DIOCLES was a Phyſician of the greateſt diſtinction after *Hippocrates*; the *Athenians* called him the ſecond *Hippocrates*; and *Galen* ſays, that none before him, diſſected and diſplayed the parts ſo well. Diocles.

PRAXAGORAS was a famous Phyſician, a native of the Iſle of *Cos*, as well as *Hippocrates*, and of the ſame family; the laſt of the race of the *Aſclepiades*, who excelled in his profeſſion; and he was conſidered as a great Anatomiſt in his time. Praxagoras.

PHILOTIMUS, *Eudemus* and *Pliſtonicus* were diſciples of *Praxagoras*. *Galen* gives the firſt the character of a good Surgeon; Philotimus, Eudemus and Pliſtonicus.

and ſays the ſecond was an accurate Anatomiſt, particularly in reſpect to the nerves. *Celſus* ſpeaks of the third, but not in very advantageous terms, concerning his notion of digeſtion of the aliment in the ſtomach.

Ariſtotle the Stagyrite.

ARISTOTLE was a native of *Stagyra*, a ſmall City in *Macedonia*, born about four hundred years before our Saviour. He ſtudied under *Plato* at *Athens*, was one of his moſt ſhining ſcholars, but gave his maſter much offence, by oppoſing his doctrine; and afterward he became the head of the *Peripatetics*. He had great opportunities of improving his genius, under the patronage of *Alexander* the Great, who was his pupil. He was conſidered as a Phyſician, as well as a great Philoſopher, and by his writings it appears he paid attention to Anatomy; but entertained ſome odd notions, in reſpect to Phyſiology, and the uſe of many parts of the human body.

Herophilus and Eraſiſtratus. They were the moſt celebrated Anatomiſts of Antiquity. Cent. 38.

HEROPHILUS and *Eraſiſtratus* were celebrated Phyſicians, and Profeſſors of Anatomy, at *Alexandria*, after the death of *Alexander* the Great. It is ſaid, they diſſected a great

great number of human bodies, and were accuſed of opening ſome alive, to diſcover the motion of the heart, &c. They made many anatomical diſcoveries; and *Fallopius*, who was an eminent Profeſſor at *Padua*, was ſo great an admirer, of *Herophilus*, as to declare, he would as ſoon contradict the Goſpel, as *Herophilus*.

A ſchool, of Herophilians in Phrygia.

ACCORDING to *Galen*, the ſchools eſtabliſhed by theſe great men, and their diſciples, were long in high repute; and *Strabo* teſtifies, that near his time there was a ſchool of *Herophilians* in *Phrygia*, in which *Zeuxis*, a man of great note, preſided, who was bred under *Herophilus*.——

A ſchool, of Eraſiſtratens at Smyrna.

About the ſame time, there was alſo a ſchool of *Eraſiſtratens* at *Smyrna*, of which *Hiceſius* was maſter, who had the character of being one of the greateſt Phyſicians of thoſe days.—Hence we may juſtly conclude, that the ſtudents in theſe ſeminaries were taught Anatomy: and as *Herophilus* and *Eraſiſtratus* were profeſſed and celebrated Anatomiſts, it is very reaſonable to ſuppoſe the diſciples of ſuch eminent Profeſſors ſhou'd imbibe their principles, follow their precepts,

and daily ſtudy to make improvements, for the benefit of thoſe that might come under their inſtruction.

Serapion, Philinus and Heraclides of Tarentum were of the empirical ſect.

SERAPION and *Philinus*, and many other Phyſicians of eminence, were of the empirical ſect, ſo called for relying upon practice and experience only, in the acquirement of medical knowledge, without introducing Philoſophy into the ſtudy of it. They were educated under *Herophilus* at *Alexandria*, conſequently acquainted with Anatomy; ſo was *Heraclides* of *Tarentum*, a famous Empiric, who was alſo reputed a very ſkillful Surgeon.

Apollonius of Memphis, now Grand Cairo, &c.

APOLLONIUS of *Memphis*, now *Grand Cairo*, the capital of *Egypt*, and many Phyſicians of eminent character there, were ſcholars of *Eraſiſtratus*, and wrote upon anatomical ſubjects, as we are told by the learned, though their works may have periſhed through time.

Greek Phyſicians came and reſided at Rome, of which Arcagathus was the firſt.

IN the declenſion of the *Grecian* Empire, when the *Romans* had made large ſtrides towards univerſal monarchy, and

Rome

Rome, in great ſplendor and magnificence, became the ſeat of univerſal learning, arts and ſciences, which the *Greeks* unrivalled had long and glorioufly cultivated at *Athens*, *Arcagathus* a *Peloponneſian* came and reſided at *Rome*, in the Conſulate of *Lucius Æmilius* and *Marcus Livius*, and after him ſome other *Greek* Phyſicians; but their practice and conduct proving very diſpleaſing to the *Roman* people, ſome writers have imagined, they were baniſhed the City, on that account, by a decree of the Senate, promoted by *Cato*; however, that event is not ſupported with inconteſtible evidence, tho' it is very certain *Cato* entertained an averſion to the *Greeks*, and approved the medical art, as it had long been practiſed at *Rome*, in great ſimplicity, rather than be obliged, for improvement of it, to thoſe whoſe morals offended his rigid virtue.

Cato ſuppoſed to promote a decree for the baniſhment of the Greek Phyſicians from Rome.

Till the time of *Julius Cæſar*, this art was not patroniſed and encouraged at *Rome*, like other arts and ſciences; but by an edict of that Emperor, foreigners, particularly the *Greeks*, they being moſt ſkilful in phyſic, were invited thither, and promiſed they

The Grecian Phyſicians patroniſed by Julius Cæſar.

ſhou'd be made Deniſons, enjoying all the privileges and immunities of *Roman* Citizens; which invitation and fair proſpect of accruing advantages, brought many great men to the Metropolis of the world, raiſing a ſpirit of emulation in the native *Romans*, to proſecute medical ſtudies, who afterwards made a ſhining figure in their profeſſion, and were much in favour with the Emperors, and people of the higheſt rank and character for learning, as we are well informed from hiſtory: and the indignity that ſome Hiſtorians have caſt upon the *Roman* Phyſicians, ſeems not well founded.

Aſclepiades, denominated a Dogmatiſt. Cent. 39.

About 100 years after *Arcagathus*, who was the firſt *Grecian* Phyſician that left his native Country, and came to practiſe at *Rome*, *Aſclepiades* ſettled there, following the example of his country men, with a view of making his fortune better than at home. He was called a Dogmatiſt, becauſe he joined reaſoning to experience, in oppoſition to the empirical ſect, which admitted only of experience, as the ſolid baſis to build medical ſcience upon. He was a native of *Pruſia* in *Bythinia*, which is indebted

for

for its numerous pleaſant rills and fountains to proud *Olympus* aſpiring to the clouds; and near this city too are the celebrated baths of *Calypſo*, much reſorted to for their ſalubrious virtues. Upon his arrival at *Rome*, he firſt taught Rhetoric, which ſcheme not anſwering his expectations, he turned his thoughts to Phyſic, having ſtudied it at *Alexandria*, and ſoon acquired great reputation and eſteem in his new profeſſion, by treating his patients in a gentle manner, and more agreeably to their own humors, departing from the ſevere and rigid rules of his predeceſſors, allowing them wine and other indulgences. By his complacency and ſuperior underſtanding, he gained the hearts of the people ſo much, that he was adored, and compared to *Hippocrates* himſelf, and had a marble buſt erected to perpetuate his memory. He was conſidered by the *Literati* at *Rome*, as a very learned and eloquent man, as well as an eminent Phyſician; much admired by *Cicero*, who called him his friend, an honor that gave him more pleaſure than the favor

of

Aſclepiades invited to the Court of Mithridates King of Pontus.

of King *Mithridates*, who was a great patron of medical men, and having a high opinion of this illuſtrious man's abilities in his profeſſion, invited him to his Court; but he reſiſted the moſt powerful temptations of that prince. He entertained ſome ſingular anatomical and phyſiological notions; but had a great many diſciples and followers, till the methodical ſect ſprung up, of which we ſhall take notice preſently. There were ſeveral Phyſicians of high character his cotemporaries at *Rome*, with whom he lived in great amity.——*Antonius Muſa*, *Auguſtus*'s favourite Phyſician, who flouriſhed many years after, and had a ſtatue erected to immortalize his name, near that of *Æſculapius* at *Rome*, was a great admirer of *Aſclepiades*, to whom he acknowledged himſelf much indebted.

Caſſius, one of the moſt celebrated Phyſicians of his time.

Caſſius, a man of great repute, ſucceeded *Aſclepiades*. He is ſpoken of as one of the moſt celebrated Phyſicians of the age in which he lived. He was bred under *Aſclepiades*; but, in his latter days, diſſented from ſome of his maſter's tenets. He underſtood Surgery, aſſigned reaſons for round ulcers

ulcers healing with more difficulty, than thoſe of an oblong or angular figure; and he was of opinion, that the oppoſite ſide becoming paralytic, in an injury of the brain, was owing to a decuſſation of the nerves, but that is not allowed to be an anatomical fact; nor is the effect invariable, though the oppoſite ſide is more generally ſo affected, as experience evinces. *Galen*, and *Scribonius Largus* Phyſician to *Claudius*, mention him in advantageous terms. That Emperor ſtudied Phyſic, and was a great patron of the Profeſſors of it: and in his reign alſo lived *Alcon*, a famous Surgeon and Anatomiſt, called by *Pliny*, *Medicus vulnerarius*, who acquired an immenſe fortune by his practice.

Themiſon, founder of the methodical Sect. Cent. 40.

Themiſon was a *Laodicean*, founder of the methodical ſect, ſo called, from propoſing a method to render phyſic more eaſy to be learnt and practiſed, without joining philoſophy to it; and the practice of the Phyſicians of this ſect conſiſted principally in abſtemiouſneſs and ſlender diet. This Phyſician practiſed at *Rome*, towards the concluſion of the reign of *Auguſtus*, or beginning

ginning of that of *Tiberius*. This ſect had great affinity to the empirical, eſtabliſhed by *Serapion* two hundred years before, with the ſame view of facilitating the ſtudy and practice of phyſic; and in thoſe days Empiriciſm was ſeen in no contemptible light. *Themiſon* had many favourers and admirers of his doctrine, as well as *Serapion*; the moſt conſiderable of the Methodiſts, after *Themiſon*, was *Soranus*, an *Epheſian*, who was educated at *Alexandria*, and afterwards reſided at *Rome*, in the time of *Trajan*. *Cælius Aurelianus* makes honourable mention of him; and there is ſome reaſon to believe he tranſlated his works into latin, or at leaſt copied much from them. *Aurelianus* was eſteemed a good Anatomiſt, by birth a *Numidian*, a Reſident and Practitioner at *Rome*; but at what time is uncertain.

Soranus, an eminent Methodiſt.

Of Cælius Aurelianus.

AFTER the Methodiſts, the Epiſynthetic, the Electic, and the Pneumatic Sects ſprung up, and had many adherents. The firſt united the ſentiments of the three preceding; the ſecond choſe what they judged beſt from each of them; and the third was ſo called, from ſuppoſing, that an ethereal ſpirit

Of the Epiſynthetic the Electic and Pneumatic Sects, and ſome of the conſiderable men that embraced their tenets.

ſpirit or air entered all bodies, poſſeſſing ſpace univerſally.——*Leonides* of *Alexandria* was an Epiſynthetic. *Archigenes*, a native of *Syria*, and a practitioner at *Rome* in the time of *Trajan*, an Electic. *Atheneus*, a famous Phyſician, by birth a *Cilician*, embraced the Pneumatic Syſtem. *Aretæus* the *Cappadocian* was alſo a favourer of the Pneumatic doctrine. He was an excellent writer; but it is not preciſely known in what time he lived, though it is generally thought to have been in the reign of *Veſpaſian*, and that he was cotemporary with *Pliny*.

Leonides.

Archigenes.

Atheneus.

Aretæus.

All theſe ſects paid regard to Anatomy.

Aurelius Cornelius Celſus was a native of *Rome*, according to ſome, and others ſay, of *Verona*. He was a Phyſician, Surgeon, and Anatomiſt, of the higheſt character in his time, ſtyled the latin *Hippocrates*, and has ever been held in reverential eſteem. Under what emperors he lived, is a matter of doubt among the learned; moſt are of opinion, and indeed it is highly probable, that he was born in the reign of *Auguſtus*, and

Celſus.

and wrote in that of *Tiberius*. His ſtyle is the moſt elegant and admired of any of the *Roman* Phyſicians, but ſeems rather too elegant and conciſe for medical ſcience. He confeſſes himſelf greatly indebted to *Aſclepiades*, as well as to *Hippocrates*, for his knowledge in his profeſſion. (*a*)

Ruffus Epheſius. Cent. 1. Of the Chriſtian Æra.

Ruffus Epheſius flouriſhed in the reign of *Trajan*. *Galen* honours him with the character of one of the moſt conſiderable Phyſicians of his time. He attempted to give a general Idea of Anatomy, and has clearly deſcribed the ſpermatic veſſels, and thoſe running to the *Ovaria*: hence it is not improbable, that the *Tubæ Fallopianæ* might be a diſcovery of his too, though aſcribed to *Fallopius*. Apes were commonly the ſubjects for diſſection in thoſe days at *Rome*, it being very difficult to get human bodies there, for that purpoſe, though undoubtedly they were ſometimes procured.

Claudius

(*a*) Vid. Aurel. Cornel. Celſi vitam à Rhodio conſcriptam. It is perfixed to Almeloveen's edition of Celſus. Et Hiſtoire de la medecine par Monſ. Le Clerc.

Claudius Galenus. Cent. 2.

Claudius Galenus was an *Aſiatic*, born at *Pergamus*, a City famous on many accounts, eſpecially for the temple dedicated to *Æſculapius*. His father's name was *Nicon*, a man of diſtinction, verſed in arts and ſciences; he inſtructed his ſon very early himſelf, and ſpared no pains or expence in his education, procuring him the moſt able and learned maſters, in every branch of literature. His mother was a notable Œconomiſt, but too much a Xantippe for his father's peace. After having finiſhed his academical ſtudies, he became a very great traveller, in purſuit of knowledge, and when he returned from his travels, he dwelt ſome time at *Alexandria*, where he had been educated. At 28 years of age he removed to *Pergamus*, and was driven from thence at 32, by a popular ſedition, and went to *Rome*, with an intention to fix his reſidence in that imperial, attractive City, where arts and ſciences were cheriſhed and cultivated. There he met with ſignal marks of favor and eſteem, from people of the higheſt rank and character; but this diſtinction raiſed him many enemies in the faculty. The envious treatment, which his

his ſuperiority occaſioned, made his ſituation ſo diſagreeable and uneaſy, that after having dwelt four or five years at *Rome* he returned to *Pergamus*. Soon after that, *Marcus Aurelius* and *Lucius Verus*, Generals of the Roman Army then at *Aquila*, hearing of his great fame, ſent an expreſs for him, and he attended the former of theſe great Perſonages to *Rome*, the other dying in his return home. *Galen* having then the good fortune, ſhortly after his arrival at *Rome*, to cure *Sextus*, one of the ſons of *Marcus Aurelius*, predicting the event of his diſeaſe, contrary to the opinion of the other Phyſicians concerned, his reputation was highly exalted. This happy preſage made him conſidered, as the greateſt Phyſician of his time; and his excellence in Surgery, which he alſo practiſed, is manifeſt in many inſtances. But great men have their foibles; he entertained ſuperſtitious notions, was full of ambition, quick of reſentment, too ſenſible of injuries, as we have ſeen; and remembering, with ſome indignation, the detraction and malevolence he received from his brethren before, he laid hold of the advantage his popularity now

gave

gave him, to ſhew his reſentment of former indignities, which effectually ſilenced his enemies. He was an excellent Orator, and the beſt Anatomiſt that had ever been at *Rome* : many perſons of the higheſt diſtinction, honouring him with their preſence at his lectures and demonſtrations, popular prejudices were in a great meaſure removed, and the Roman people in general better reconciled to Anatomy. He wrote his book *de Uſu Partium*, the moſt admired of all his works, at the deſire of *Lælius*, his friend and patron, a man of conſular dignity. In all probability at *Rome* he might find difficulty in procuring human bodies for diſſection; yet that he did diſſect ſuch, as well as apes and other animals, is very evident from his own writings, notwithſtanding what ſome writers have ſuggeſted to the contrary. I have read that the Phyſicians and Surgeons, who attended *Marcus Aurelius* in the German war, were allowed to diſſect enemies bodies ſlain in battle ; and that this extraordinary man had the like indulgence granted him, in the expedition he attended into *Gaul*. He made many uſeful diſcoveries and remarks, aſſumed

med by ſucceeding Anatomiſts, of which they availed themſelves. His phyſiological and medical notions were implicitly followed for many ages, and the *Arabians* were much indebted to him for their reputation in the world. He was a very voluminous writer, and employed his pen upon various ſubjects, beſides what related peculiarly to his profeſſion. Many of his books were depoſited in the Temple of Peace at *Rome*, and deſtroyed when that was burnt.

Lucius Apuleius.

Lucius Apuleius lived at the ſame time with *Galen* at *Rome*. He was an *African*, born at *Madaura*; his father's name was *Theſeus*, a man of great account in his Country, and his mother was related to *Plutarch*. He ſtudied firſt at *Carthage*, and then at *Athens*, and followed the profeſſion of the law for ſome years after he came to *Rome* : and being a man of extraordinary talents and elocution, gained great applauſe at the bar, yet quitted it for Phyſic. He was a great admirer of *Plato*, followed his example in joining Philoſophy to that ſcience, conſidering that theory and practice united were neceſſary qualifications for a Phyſician ;

Phyſician : and he arduouſly purſued anatomical inquiries.

Oribaſius, *Alexander Trallianus*, *Ætius* and *Paulus Ægineta* were great Writers, but chiefly Compilers, and may be conſidered as Anatomiſts. *Paulus* was the laſt of the *Alexandrian* School.

Oribaſius, Alexander Trallianus Ætius, and Paulus Ægineta

UNDER the conduct of the Caliph, as we have before obſerved, the *Saracens* took *Alexandria*, A°. C^t. 640, deſtroyed the Univerſity, and burnt the Library, which was the greateſt repoſitory of learning in the world. ——Soon after the deſtruction of this famous Univerſity, learning ſprung up in *Arabia*; and from that time to the 13th century, the *Arabians* were almoſt the only people, who cultivated the medical art; and in all probability, ſome books fell into their hands, ſaved out of the flames.—— In the ſame century too, as we have mentioned, the irruption of the *Goths* and *Vandals* proved greatly detrimental to learning of every kind in *Europe*.——*Rhazes*, *Avicenna*, *Avenzoar*, *Averrhoes*, and *Albucaſis*, were the moſt noted among the *Arabian*

Alexandria taken by the Caliph of the Saracens and the library burnt.

In what period of time the Arabians were the moſt conſiderable in the province of Phyſic.

Some books might be ſaved out of the conflagration.

Irruption of the Goths and Vandals.

The moſt noted of the Arabian Phyſicians.

Phyſicians; but their anatomical deſcriptions were borrowed from the *Greeks*; for a ſuperſtitious notion prevailed with them, as with the *Jews*, that touching a dead body defiled the living.

Univerſities opened for the ſtudy of Phyſic in ſeveral parts of Europe.

AFTER the fall of *Alexandria*, Univerſities were opened in ſeveral parts of *Europe* for the ſtudy of Phyſic, which, from various concurring cauſes and circumſtances, made a very ſlow progreſs for many ages; but about the 13th century, learning began to ſpring up, and the medical art to flouriſh.

Mundinus in the greateſt repute at Padua till the time of Morgagni.

Mundinus was an eminent Profeſſor at *Padua* in this century, whoſe Compendium of Anatomy was appointed, by the laws of that and other Univerſities in *Italy*, to be uſed as the text-book, for the Profeſſors to comment upon, and continued in that great credit for near three hundred years. Early in the 15th century, *Alexander Achillinus*, a *Bononian* Profeſſor, and his brother *Philotheus*, improved it; ſoon after, *Berengarius*, ſtyled the *Italian Herophilus*, wrote large and learned commentaries upon this book

book, and ſo it ſtood in uſe, till the time of *Morgagni*, the preſent moſt celebrated Profeſſor of Anatomy at *Padua*. *Mundinus* was thought to be better acquainted with the ſtructure of the lungs, than any Anatomiſt before him. He underſtood the diſtribution of the nerves; and he deſcribed the *pancreatic duct*, though *Virſungus*, one of *Veſalius's* pupils, has the honor of that diſcovery.

Arts and ſciences meet with great public encouragement in France.

Arts and ſciences met with ſignal marks of royal favor and patronage in *France*, for many ſucceſſive generations: and ſince the eſtabliſhment of public lectures at St. *Côme*, for the improvement of Surgery and Anatomy, that Kingdom has produced many excellent Anatomiſts and Surgeons.

Conſtantinople taken by Mahomet, and the conſequences of that revolution.

About the middle of the 14th century, *Conſtantinople* was taken by *Mahomet*, who ſtudied to ſuppreſs literature, and keep his ſubjects in ignorance, from political views. Upon this revolution, the *Greeks* fled, and carried their books, as their Penates, to the Weſt, where the plagiariſm of the *Arabians*, in reſpect to the *Greeks*, was diſco-

vered enough to bring them into ſome diſrepute.

Alexander Benedictus

Alexander Benedictus wrote towards the concluſion of the 14th century, who made many diſcoveries, aſcribed to more modern Anatomiſts.

Writers in the 15th century.

Jacobus Berengarius Carpenſis.

Jacobus Berengarius Carpenſis, ſometimes called *Jacobus Carpus*, was a Profeſſor of great repute, in the beginning of this century, at *Bononia*, now *Bologna*, the moſt noted Univerſity for phyſic in *Italy*; and he appears to have been the firſt, who publiſhed anatomical plates or figures, which were cut in wood in thoſe days, not in braſs or copper. He diſſected a great number of human bodies, and a clamor was raiſed againſt him, as againſt *Herophilus* and *Eraſiſtratus* near two thouſand years before, upon a ſuſpicion of opening ſome of them alive. The deſcription of the *Papillæ Renum*, given by *Maſſa*, *Fallopius* and *Bellini*, was his. The *pellicle* in the middle of the *Scrotum*, or *Septum Scroti* of *Raw*, is his diſcovery;

diſcovery ; but Anatomiſts ſeem not yet fully agreed concerning the diſtinct exiſtence of this part. He has accurately deſcribed the *Veſiculæ ſeminales*.——It is ſaid, that he firſt knew the uſe of *Argentum vivum*, in the cure of the venereal diſeaſe ; by which ſecret he gained great fame and wealth.——His book *de Fractura Cranii* is a convincing teſtimony of his chirurgical abilities.

Andreas Luccini, a Spaniard

Andreas Luccini was an eminent *Spaniſh* Phyſician, educated, I think, at *Salamanca*. Anatomy very particularly engaged his attention, and he epitomiſed ſome of *Galen's* works.

Nicolaus Maſſa.

Nicolaus Maſſa has been accuſed of plagiariſm ; he made but few anatomical diſcoveries, but boaſts of many.

Jacobus Guinterius.

Jacobus Guinterius was an able Anatomiſt ; he gave the beſt deſcription of the muſcles of any before him ; and ſays he taught *Veſalius* many things.

Fernelius.

Joannes Fernelius was a native of *Picardy* in *France*, probably of *Amiens*, the Capital

of that Province. He was a man of great erudition and eloquence, much admired by the learned for the elegance of his ſtyle. He was Archiater to *Henry* the ſecond of *France*, and did great honor to his Country, and his Profeſſion. He underſtood Anatomy; it is ſaid he diſcovered the *Os hyoides*; but it is deſcribed in *Galen*.

Cleander. *Joannes Cleander* was an Anatomiſt of ſome note; but wrote only about the parts of the head.

Sylvius. *Jacobus Sylvius* was an Anatomiſt of the greateſt repute at *Paris*; he well deſcribed the *Muſculi pyramidales*, the diſcovery of which has been aſcribed to *Maſſa*.

Veſalius. *Andreas Veſalius* is to be conſidered as a great reformer of Anatomy; he was the moſt celebrated man of his time, and dared to contradict the received infallibility of *Galen*. He was born at *Bruſſels*, the Capital of *Brabant*, early in the 15th century; and, for a great many generations, his family had much diſtinguiſhed themſelves in the medical art. Extraordinary care was taken

of

of his education, before he was ſent to the College at *Louvain*, where he proſecuted academical ſtudies very ſedulouſly, and acquired great knowledge of the *Grecian*, *Roman* and *Oriental* languages; yet whilſt he was indefatigable in theſe purſuits, his native paſſion for Anatomy was ever uppermoſt; even whilſt a boy, he frequently employed his time in diſſecting dogs and other animals, as a matter of amuſement and diverſion; an early preſage of his future greatneſs in that ſcience. He viſited many Univerſities, and became intimate with the moſt learned men; he diligently ſtudied Phyſic, Surgery, and Anatomy, under *Jacobus Sylvius* at *Paris*, who excelled all his cotemporaries, but he himſelf publicly declared *Veſalius* excelled his maſter. Purſuing anatomical ſtudies with uncommon ardour and reſolution, he ſoon obtained the character of the greateſt proficient of his time; and his public lectures were univerſally admired. In the early part of his life, he wrote his *Encheireſis anatomica*, which proved a good directory to ſtudents in thoſe days; the large work, that he publiſhed afterwards, is a book ſtill in great eſteem, in the plates

of

of which, the muſcles are repreſented bold and ſwelling, reſembling life and action, more than in thoſe of *Euſtachius*; and conſequently, on thoſe accounts, are more admired.

Veſalius was Archiater to the Emperor *Charles* the fifth, who, for a monaſtic life, reſigned the imperial diadem to his brother *Ferdinand*, and the crown of *Spain* to his ſon *Philip*; and being in the greateſt degree of favor with *Philip*, and alſo in the higheſt reputation for ſkill in his profeſſion, he was called to the *Spaniſh* Court; where he cured Prince *Charles*, the King's ſon, of a contuſion on his head, after accurately and judiciouſly deſcribing the cauſe of his threatning ſymptoms, by dividing the *Pericranium*, when the Spaniſh Phyſicians and Surgeons had pronounced the caſe incurable. This happy event gained him great applauſe, though, at the ſame time, it raiſed him implacable enemies in the faculty at *Madrid*, ſeeing him ſo ſignally diſtinguiſhed, upon this occaſion, by the King and Nobility; but whilſt he was enjoying this happineſs, under the auſpices of the King and Court,

Court, having no room to envy any Phyſician in *Europe*, the following diſaſtrous event ſuddenly changed the ſcene. A Grandee died his patient, and he being very deſirous of inveſtigating the obſcure cauſe of his death, begged leave of the relations to open the body, which requeſt was granted. Some of the ſpectators, who probably were not *Veſalius's* friends, declared they ſaw the heart palpitate, upon his opening the *Thorax*, and poſſibly a tremulous motion might proceed from preſſure upon the *Vena cava*, or ſome other accidental cauſe; and ſuch a ſlight appearance might be aggravated by thoſe ready to do him ill offices; however, their declaration ſoon reached the ears of the Nobleman's relations, and raiſed a ſuſpicion that the body was opened alive; in conſequence of which he was proſecuted for homicide and impiety, and brought before the Inquiſition, where the King's authority cou'd not ſave him from the rigorous ſentence of that diabolical tribunal; but after long durance, through the mediation of the King and the united ſupplication of the Court, and people in power, who were fully convinced of the injuſtice of his accuſation,

ſation, his ſentence was remitted, and he obtained his liberty, upon condition of making an expiatory pilgrimage to *Jeruſalem*. From thence he was called, by the *Venetian* Senate, and invited, in the moſt earneſt and honourable manner, to go to *Padua*, then ſubject to the *Venetians*, and fill the Profeſſor's chair, vacated by the death of the great *Fallopius*; but adverſe fortune ſtill purſued this illuſtrious man, who, in his return from his peregrination, to atone for a pretended crime, was wrecked upon the coaſt of *Zant*, in a deſolate part of the Iſland, where, deſtitute of all ſupport, he miſerably finiſhed his life, before he was full fifty years of age, a life which ſeemed to merit the peculiar indulgence of Heaven. His corpſe wou'd have been food for the wild beaſts, had not a perſon that knew him, happened to come by at this juncture, who, in great humanity, gave him decent burial, in St. *Mary's* Church in the City of *Zant*, erecting a tomb to his memory, was this inſcription.

Andreæ

Andreæ Veſalii Bruxellenſis Tumulus
Qui obiit Idibus Octobris
Anno 1564.
Ætatis vero ſuæ quinquageſimo
Quum Hieroſolymis rediiſſet.

So fell this excellent man, a ſacrifice to the tyranny of mercileſs ſuperſtition, who in his early days was remarkably diſtinguiſhed in many Univerſities beſides *Louvain*, where he was originally educated; and had ſignal marks of favor conferred upon him by Kings and Potentates, and perſons of the higheſt character for learning; a memorable inſtance of which is the honor intended him at laſt by the Noble *Venetian* Senate.

Carolus Stephanus was a great Proficient. He ſays, an accident happened that kept his work from the preſs, by which means *Veſalius* anticipated him, in publiſhing ſome diſcoveries and improvements in Anatomy. He is the firſt, who diſcovered the *Valves* of the *Cava* and the *Platyſma myodes*; and *Morgagni* gives him the honor of diſcovering the *Tunica arachnoides*. Stephanus.

Columbus,

Columbus, Euſtachius and Fallopius.

Columbus, *Euſtachius* and *Fallopius*, were alſo great Anatomiſts and Rivals of *Veſalius*.

Paré.

Ambroſe Paré was an ornament to the *French* Nation, and ſucceſſively Surgeon to four Kings; he deſerved well of Surgeons and Anatomiſts. He was providentially preſerved in the maſſacre of the Proteſtants in *France*, and died in an advanced age, in the year 1590.

Philippus Sicilius.

Philippus, called the *Sicilian Hippocrates*, made but few diſcoveries. His works were poſthumous.

When the learned were moſt engaged in tranſlating the Greek authors into latin.

MANY more Anatomiſts of diſtinction might be enumerated, who lived in this age; in which alſo, till the concluſion of it, the learned, in different parts of the world, were very buſy in tranſlating the *Greek* Writers in Phyſic into latin, by which means, every thing relative to the medical art, became more univerſally known. Among the reſt, the great *Linacre*, who was Phyſician to *Henry* the eighth, tranſlated many of *Galen's* works into latin. (*a*)

Harvey

(*a*) Vid. Opera I. Friend M. D. de Hiſtoria Medicinæ pag. 587 & ſeq.

Harvey was a famous Phyſician, born at *Folkſtone* in *Kent*, and educated at *Caius* College in *Cambridge*; after which he ſtudied five years at *Padua*, and was Phyſician to *Charles* the firſt. He was a great Benefactor to the College of Phyſicians, and died in the 80th year of his age, A. C. 1657. Thoſe who are willing to rob our Countryman of the diſcovery of the circulation of the blood, ſay, that it was known to *Servetus*, *Nemeſius*, *Columbus*, *Cæſalpinus*, *Arantius*, &c. but with no valid authority. The immortal *Harvey* made this important diſcovery, and demonſtrated the fact in the year 1628. He wrote very learnedly upon this, and many other curious and uſeful ſubjects; and the anniverſary commemoration of this great Genius is an honor due to his memory, which, with his own works, will prove more durable than braſs or marble. Harvey.

Spaher of *Inſpruck* and *Remilinus* publiſhed anatomical plates, laid one over another, which, by unfolding, were deſigned to ſhew the parts, as they riſe in diſſection. It was a work of ſome uſe, to give a general idea Spaher and Remilinus.

idea of Anatomy; and Doctor *Clopton Havers*, Author of *Osteologia nova*, thought it deserved his attention enough to publish an edition of it, with corrections and emendations: however, it is now in but little esteem: indeed it is very inaccurate, and not to be depended upon.

The last century produced many learned and ingenious Anatomists, as *Bartholinus*, *Walæus*, *Riolanus*, *Spigelius*, *Veslingius*, *Laurentius*, *Glandorpius*, *Lancisius*, *Nuch*, *Steno*, *Swammerdam*, *Diemerbroeck*, *De Graaf*, *Bidloe*, *Ruysch*, *Van Horn*, *Pecquet*, *Asellius*, *Bellini*, *Leeuwenhoeck*, *Valsalva*, *Du Verney*, *Verheyn*, *Cowper*, *Willis*, *Wharton*, *Havers*, *Lower*, *Lister*, *Glisson*, *Ridley* and others: some of which treated the subject in general, and others in particular.——We are also exceedingly obliged to many celebrated men of the present age, who have given their attention to Anatomy, and pursued it zealously, in most parts of *Europe*, by which this science has received great improvements; and, as Anatomy is more universally known, and better understood, the world must consequently have abler Surgeons than in former ages.

Of

Of WOUNDS in general.

PART I.

Division of the following treatise.

IT is designed in the first part of this treatise, to shew the nature and difference of wounds, their *Diagnosis* and *Prognosis*, with the general treatment of them: and in the second part, to consider them with their treatment, more distinctly, from the head, through all the cavities, including the extremities; interspersing histories of cases, remarks, and short anatomical descriptions, with the situation of parts, in order to illustrate the subject, making references occasionally, from the one part to the other. (*a*)

Boerhaave's

(*a*) I could not well alter my original plan of this treatise laid some years ago, for a confined purpose, having then no intention of publishing these papers, which might indeed have been contracted into a narrower compass; but in the whole as it is, I hope it will not prove less instructive to those for whom it is now expressly designed.

Definition of a wound.

Boerhaave's definition of a wound is the moſt exact, and agreeable to the common acceptation of the word. He ſays, that a wound is a recent and bloody ſolution of continuity in the ſoft parts, made by a hard, ſharp inſtrument. By its character of recent and bloody, it is diſtinguiſhed from an ulcer, being in a ſoft part, it differs from a fracture, and inflicted with a hard, ſharp inſtrument, it cannot be confounded with a contuſion; but we may farther obſerve, that wounds are made by obtuſe, as well as inciſive, inſtruments, and by the latter, bones may receive cuts, which, with propriety enough, may be called wounds.

The compoſition of the human body.

THE human fabric is, the maſterpiece of our great Creator's works in this ſublunary world, conſequently the moſt worthy our contemplation; and it is to be conſidered, as the moſt curious *hydraulic* machine, compoſed of a ſeries of pipes or veſſels, of various kinds, and in every direction, having a wonderful connection, dependence upon, and correſpondence, one with another. It appears a plexus of veſſels, with a great variety of liquors moving in them, to ſerve the

different

different purpoſes of the animal œconomy, as far as the eye can carry us, with the help of the beſt glaſſes and anatomical injections, even in the moſt ſolid parts; and we muſt admit of a vaſcular *texture ad infinitum*, beyond all ſcrutinizing, but that of our reaſon, when it ceaſes to be the object of our ſenſes, by ſuch aſſiſtance. The fluids of an animal body, by progreſſive motion, and mechanical powers, are joined to, and become ſolids, in a manner beyond our comprehenſion, raiſing our admiration, and confounding our limited faculties, unequal to ſuch abſtruſe reſearches.——The performance of all the actions and functions of the human body, depends on the due tone, or elaſticity and energy, of the veſſels, with their contained liquors of a proper fluidity and craſis, circulating thro' them; and, in their regular, and uninterrupted reciprocal actions, conſiſt health and life. (*a*) Hence the danger of a wound is to be conſidered and eſtimated in proportion to its ſize, the diameter of the divided veſſels, the nature

When we muſt reaſon analogically.

(*a*) See profeſſor Whytt's treatiſe on vital motions, &c. and his inquiry into the cauſes of the circulation of the fluids in the very ſmall veſſels of animals.

of the parts wounded, &c. as will be ſpecified.

Of the exploration of wounds.

SUPERFICIAL wounds, when well cleanſed from the blood, are perceptible to the ſight. The finger is better than any inſtrument to explore ſome kinds of wounds, not fully expoſed to view; and a bougie is preferable to the common probe, on account of it's flexibility, where the entrance is narrow, and the courſe of the wound winding, intricate, and running deep; under which circumſtances, to direct our judgment in the exploration of the wound, we are to inquire, what attitude the patient was in, when he received it, the ſhape of the weapon, how far it penetrated, how it was directed, with what force the blow was given, obſerving what kind of fluid is diſcharged, and every neceſſary appearance and circumſtance for our information. The deliberate conſideration of theſe premiſes, joined with a good anatomical knowledge of the parts, their actions and uſes, may enable us to draw concluſions, pretty well to be depended upon, concerning the nature and character of the wound, in order

to

to preſage it's event, and direct us to rational meaſures in the treatment of it.

Nature and diſtinction of wounds.

WOUNDS are divided into claſſes, as ſimple and compound, not mortal, and mortal. A puncture or inciſion, without contuſion or other particular injury, is termed a ſimple wound; but when attended with ſuch circumſtances, it is called compound or complicated. If a part is wounded in ſuch a manner, that the circulation of the blood is ſoon put to an end, it is called a mortal wound without exception. Wounds of the cerebellum, or which penetrate the cavities of the heart, or adjacent large veſſels, are of that claſs; and wounds of other parts, not mortal in their nature, may kill the patients, without aſſiſtance from art; tho' when treated ſkilfully, the danger may be averted. The effuſion of blood from a wound of any conſiderable artery might deſtroy the patient, were no means uſed to reſtrain it, but by compreſſion, or ligature, or ſome other expedient, in a part that can be come at, the patient's life may be preſerved. Alſo wounds coming under the denomination of not mortal,

may by neglect or miſmanagement, prove of fatal conſequence. The patient's irregularity, too tight bandage, improper applications, &c. may produce direful ſymptoms in ſimple wounds, having originally no appearance of danger.

Of the difference of wounds.

It is proper, to conſider diſtinctly wounds of the common teguments, muſcles, arteries, veins, lymphatics, glands, nerves, tendons, membranes, ligaments, &c. with their various kinds, and the effects and accidents accompanying them.—The firſt difference of a wound ariſes from the kind of weapon or inſtrument, and the manner of it's making the wound, whence it receives the denomination of inciſion, puncture or laceration.——The ſecond difference, of uſe to be taken notice of, is the figure of the wound, as rectilineal, oblique, tranſverſe, curved, angular, or round.—The third difference is in reſpect to it's ſize, whether long or ſhort, deep or ſuperficial: and, when a muſcle is divided, that has an antagoniſt, there may appear a great diſtortion of the parts, and the figure of the wound be much altered by that means, which

First difference.

Second difference.

Third difference.

A remark deſerving notice.

which is a remark worth attention. And, under this article of the difference of wounds, we may ſubjoin the accidents belonging to them, as pain, inflammation, gangrene, extraneous bodies lodged in them, &c. all which will be treated of in order.

HAVING ſhewn the diſtinction and difference of wounds, we ſhall take a view of them in the different parts, beginning with thoſe of the teguments and fleſh only, proceeding regularly to the moſt complicated.

A deſcription of the appearances of a ſimple wound.

THE appearances which a large ſimple wound of the teguments and fleſhy parts will have, in a young healthy Perſon, when no conſiderable artery is wounded, from the beginning till the cure is completed, are theſe.—In proportion as the wound deviates from a ſtrait line, or longitudinal courſe, the divided parts recede, by the natural elaſticity of animal fibres, which inſtantly ſhorten, when the reſiſtance to their action is removed.—Immediately after the ſeparation of the lips of the wound, an effuſion of blood enſues, which gradually ſtops, as the

contractile power of the retracted veſſels conſtringes their mouths, and the blood there coagulates.—After this the wound appears covered with a bloody cruſt, which is nothing but the coagulated blood, ſticking in the numberleſs mouths of the divided veſſels.—Soon after a reddiſh ſerum called gleet, which is a favourable appearance, comes trickling out; for now the mouths of the veſſels are ſo contracted in their diameters, that they cannot tranſmit mere blood.—Then, in a little time, the lips of the wound become tumid, inflamed, retorted, and painful, the invariable and inevitable effects of the contraction of the mouths of the veſſels, with the obſtruction of the fluids in the adjacent veſſels, and the ſtricture the ſkin makes upon the cellular membrane; but this tumefaction of the parts, when to a moderate degree, unattended with great pain, is no unfavourable circumſtance.—Now febrile ſymptoms ſupervene, and in proportion to the pain, the velocity of the blood will be increaſed; for pain may be conſidered, as the moſt active ſtimulus, to accelerate the motion of the blood, and indeed does often make it very rapid.—On the third or fourth day, pus generally

generally begins to appear in the wound, which is deſcribed both by *Hippocrates* and *Celſus*; and when laudable, it is thick, of a yellowiſh white color, like cream, having little or no ſmell.—This formation of pus is the effect of the vital action of the veſſels, by which, and the heat of the parts, when the wound is defended from the influence of the air by proper application, the effuſed fluids are concocted into the apparent homogeneous, tenacious matter, called pus; and this operation of nature is the digeſtion of the wound.—When this is performed, the ſymptomatic fever and pain generally abate; after which, the inflammation and tumefaction, gradually ſubſide, and diſappear, as the obſtruction in the veſſels is removed, and the circulation thro' them becomes open, free and eaſy.—If nothing obſtructs this proceſs of nature, the vital powers and native heat will cleanſe the wound, and the extremities of the *Vaſa minima* or *Vaſa Vaſorum*, by the impelling force of the blood, will be ſtretched out; and when there is an addition made to them, from that fluid, the extremities of theſe protruded veſſels, elongated by little

and

and little, give the appearance of *Papillæ*.——In ſome of the new made veſſels, from all directions, forming a *plexus* or net work, I have, with a good glaſs, manifeſtly obſerved pulſations, where there has been a conſiderable loſs of ſubſtance.—This generation of fleſh is called the incarnation of the wound; at the edges of which carnous ſubſtance, when incapable of farther extenſion, or checked in it's luxuriance, it hardens, forming on it's ſuperficies a bluiſh white pellicle, proceeding gradually from the circumference to the center; and this is termed the cicatrization or ſkinning of the wound.

HAVING attended to the phænomena, and progreſs of this wonderful operation of nature, in the generation of fleſh, of which *Galen* ſays, "*Cognosci debet circa* "*carnis generationem quòd materies illius ſit* "*ſanguis bonus, Opifex vero & Author,* "*Natura*", we may proceed to deſcribe and conſider the appearances, and conſequences of wounds in particular parts of the body, beginning with the different kinds of wounds in a ſmall artery.

WHEN

Of the total division of a ſmall artery.

WHEN a ſmall artery in a limb, or any external part of the body, is totally divided, it's retraction may bring it under the ſurrounding parts, and with the natural contraction of the diameter of it's mouth, aſſiſted by the compreſſive power of thoſe parts, increaſed by their growing tumid, the efflux of blood may be ſtopped; then it is to be conſidered, only as a ſimple wound, as we have already deſcribed; but when ſuch an artery is not quite divided, only obliquely or tranſverſely, or even longitudinally opened, it may pour out a great quantity of blood; for when the fibres, on that ſide of it which is divided, recede from each other, thoſe on the oppoſite are kept firm and fixed, conſequently the orifice of the veſſel, in whatever direction it is, enlarges under theſe circumſtances, by the impulſe of the blood. Hence we may account for profuſe *hæmorrhages*, ſometimes proceeding from ſmall wounds, where we are ſure there are no large arteries, eſpecially if the wounded veſſel lies near a bone: a remarkable inſtance of which I had from a very eminent practitioner, of a pregnant woman who had a ſmall ſplinter of wood run into her

A remarkable caſe of a puncture of a ſmall artery in the finger.

her finger, which wounded an artery near the joint; in conſequence of which, ſuch an effuſion of blood enſued as threatened abortion and even her life, and was reſtrained with difficulty by the Surgeon, when he was called to her.

Of the total diviſion of a ſmall artery contiguous to or perforating a bone.

If a ſmall artery is totally divided, lying contiguous to, or perforating a bone, it may be incapable of retracting and contracting, as we have deſcribed, to ſtop the flux of blood, as ſometimes happens after extracting a tooth. This conſideration may teach us to proceed cautiouſly in ſcalping, upon the authority of the great Profeſſor *Monro* in his Oſteology, where we know arteries penetrate the ſkull, as they may retract ſo far, upon diviſion, as to create much trouble and difficulty in reſtraining the *hæmorrhage*.

When a ſtyptic upon lint, or ſome kind of ſoft ſubſtance, is applied on account of an *hæmorrhage* proceeding from the extraction of a tooth, the Alveolus ſhou'd be well filled with it down to the bottom, and then ſome ſolid body of proper dimenſions uſed

adapted

adapted to the ſpace, in order to make a ſtrong preſſure by ſhutting the jaw, which ſhou'd have a band paſs underneath it to be affixed on the top of the head, that the jaw may not be fatigued and loſe its power. This is the beſt method of making compreſſion on this occaſion, as I have experienced. The actual cautery is ſometimes neceſſary; and in ſome parts of the mouth it muſt be looked upon as the only expedient to ſtop an effuſion of blood. (*a*)

SHOU'D

a In a diſſolved Craſis of the blood, violent hæmorrhages ſometimes happen from the gums, mouth and tongue, even without a wound In the Year 1753 I was called to a child of between 7 and 8 years of age, who had a violent hæmorrhage, in conſequence of drawing a tooth himſelf, that had been long looſe; beſides which, I obſerved an oozing of blood from every part of his gums, mouth and tongue. The uſe of the bark with alum, joining rhubarb to them occaſionally; drinks acidulated with Sp. Vitriol. and the common aſtringent topical applications; ſtrictly enjoining a proper regimen and incraſſating diet, proved his cure, tho' he was apparently in the moſt imminent danger. It is remarkable that this child's grandfather had all his life been ſubject to bleeding at his gums, and ſometimes profuſely.—A very worthy friend of the faculty conſulted me a few years ago for his own ſon, in a ſimilar caſe, tho' rather more threatening, as he had, for a long time, been ſubject to livid ſpots diſperſed univerſally in great abundance, ſhewing a higher degree of diſſoluti n of his blood; yet he was cured by the ſame treatment.—I remember

ſeeing

A ſpecies of aneuriſm obſerved by Wiſeman.

SHOU'D not the artery be quite divided, there is a poſſibility of an aneuriſm enſuing, after the wound of the veſſel is united, becauſe the cicatrix is not ſo ſtrong, as the coats of the artery, to reſiſt the impetus of the blood; which our eminent countryman *Wiſeman* tells us, happened to a Butcher in *Weſtminſter*, who was wounded between the thumb and fore-finger.

Of the conſequences of the total diviſion or only the puncture of a large artery,

UPON the total diviſion of a large artery in the extremities, the force by which the blood is ſent from the heart, overpowers the contraction of its mouth, and compreſſion from the circumjacent parts; or if ſuch a veſſel is only punctured, a fatal *hæmorrhage* may enſue, unleſs prevented by art, or the patient's fainting ſhou'd happily prove the means of ſaving his life; under which circumſtance, the inadvertent or incautious uſe of cordials, with a view of reviving the patient, might prove his deſtruction.

WHEN

ſeeing, many years ago, a man of an advanced age, who had ſuch a conſtant oozing of blood from his gums and ſides of his mouth, as proved too obſtinate for the ſkill and utmoſt endeavors of a very able Phyſician and Surgeon.

The conſequences of a wound of the brachial, femoral or axillary artery, and the neceſſary meaſures to be taken under ſuch circumſtances.

WHEN the brachial or femoral artery is wounded, though the patient ſhou'd not periſh by the *hæmorrhage*, the limb muſt ſoon die for want of nouriſhment. In this caſe, the progreſs to putrefaction will be very ſwift, attended with an emphyſema of the cellular membrane, occaſioned by an expanſion of rarefied air from cell to cell: and the limb being deprived of the regular influx of the vital fluid, the nerves, giving ſenſation, and motion, loſe their energy and influence. A wound of this kind generally requires immediate amputation, and to be performed at the part wounded; but if the brachial artery is wounded near the axilla, or the axillary, it is neceſſary to take the limb off at the joint; yet, as there are inſtances of the brachial artery dividing into two, ſoon after it leaves the Axilla, which *Luſus Naturæ* I have obſerved at different diſtances in the arm, it will be rational practice, when we feel a pulſation at the wriſt, to treat a caſe ſo circumſtanced as an aneuryſm, as we ſhall hereafter direct. I lately ſaw the ſame kind of *Luſus Naturæ* upon the thigh, in an amputation about the middle, on account of a *Spina ventoſa*. The branches

branches of the artery ran parallel, at the diſtance of near an inch, and I cou'd not diſcover any difference in their ſize. What practical uſe or inference is to be drawn from this remark, I leave to the reflection of Surgeons, as it may not be altogether unworthy their attention. (*a*)

Remarks on an amputation of the arm at its articulation with the Scapula.

THE great apprehenſion of danger from an *hæmorrhage*, in conſequence of amputating the arm at the ſhoulder, has proved a diſcouragement to the practice; but I am convinced, that compreſſion by an appropriate machine, having a well adapted compreſs, applied upon the little pectoral muſcle juſt beneath the clavicle, where the artery paſſes into the Axilla, and acted upon by a ſcrew regulating the degree of preſſure by feeling the pulſe at the wriſt, will effectually anſwer the purpoſe. This I have demonſtrated

(*a*) Vid. De Haen de aneuryſmatibus, in parte ſeptima Rat. Medendi.

He there relates a memorable cure of an aneuryſm opened in the thigh, at the Hoſpital in Vienna where he is Phyſician.

monſtrated long ago to many of my brethren, by the force of my thumb; and I am in no doubt of being able to ſtop the current of the blood in that manner, with the aſſiſtance of the thumb and fingers of my other hand upon it, long enough without being fatigued, for the operation to be performed; the operator leaving, as is directed, the muſcles, between which the brachial artery runs, to be divided laſt, when it may be as eaſily taken up by the needle and ligature, as after any other amputation, without being ſubject to the inconveniences attending the methods propoſed by *Heiſter* and others in this important point.—For want of ſome ſuch compreſſive means, I ſaw a very dexterous operator meet with great trouble and difficulty, by chuſing firſt of all to make inciſion between the muſcles, in order to convey a ligature about the artery alone, which circumſtance prolonged the operation a great while, and had he not been as intrepid as judicious, it might have diſconcerted him very much: however it ſucceeded happily. What made this operation neceſſary was an inveterate ulcer, accompanied with a caries of the bones in the

the joint, which had reduced the patient exceedingly, and brought her life into imminent danger. (*a*)

THE following operation may here be juſt taken notice of, though it is highly probable it will rarely, if ever, be attempted.

The Prize-queſtion concerning amputating the thigh at the joint propoſed by the Royal Academy at Paris, conſidered.

THE Members of the Royal Academy at *Paris*, propoſed to the conſideration of Surgeons, a few years ago, in their prize-queſtion, the expediency or practicableneſs of amputating the thigh at the joint. Tho' it might appear too enterpriſing for a Surgeon to attempt ſuch an operation, yet, I think, the queſtion demands regard; for ſuppoſing that the femoral artery, juſt below *Pou-*

part's

(*a*) See Monſr. La Faye's method of performing this operation, in the ſecond vol. of the Mem. of the Royal Academy of Surgery. He has diſtinguiſhed himſelf very much by his notes upon Dionis's operations in Surgery.—Monſ. Le Dran, a very eminent Surgeon at Paris, ſays his father was the firſt who performed it. To this excellent practitioner and writer, my worthy friend Mr. Gataker, Surgeon extraordinary to his Majeſty &c. has done juſtice, in his tranſlation of his operations in Surgery: and in his own compoſitions we find great purity of ſtyle as well as judgment in his profeſſion.

part's ligament, under which it paſſes out of the *Abdomen*, ſhou'd be wounded, or ſome incurable accident happen to the joint, if in a thin, healthy ſubject, wou'd it not be worth our deliberate conſideration and attention, joining in conſultation the ableſt and moſt experienced of our brethren, that cou'd be convened upon ſuch an exigence? *Celſus's* rule is. "*Anceps remedium potius* "*quam nullum.*" And it certainly becomes the character of a Surgeon to be neither raſh nor timorous. But in an incurable *Caries* of the bones of the joint, there appears but little encouragement to expect ſucceſs ſhou'd attend this operation, for very obvious reaſons.

Hiſtory of a memorable caſe from Boerhaave.

Boerhaave mentions a very remarkable caſe of a Peaſant near *Leyden*, who had the axillary artery totally divided with a knife, upon which accident a great effuſion of blood enſued, and the patient fainted. The mouth of the veſſel retracted ſo far, that it was impracticable to come at it with a ligature, or ſtop the *hæmorrhage* by any other means; and in this ſad and hopeleſs condition the poor man was abandoned to

his fate. He continued ſeveral days in a languid ſtate, apparently ready to expire every moment, in which time nature performed what his Surgeons cou'd not, by cloſing up the mouth of the divided artery. The arm decayed, and gradually ſhrunk and dried, becoming at length a rigid piece of mummy, which he carried about a long while.

Hiſtory of a total diviſion of the brachial artery.

I WAS deſired a few years ago, by a Surgeon, to attend a patient with him, who had juſt before been thrown out of a cart by its overturning, when he was inebriated to ſuch a degree, that he had entirely loſt his ſenſes. The wheel of the cart paſſed over the top of his arm and ſhoulder, contuſing thoſe parts very much quite to his neck; and at this juncture an iron hook, belonging to the cart, entered between the *Biceps* and *Coracobrachialis*, making a large lacerated wound, and included the *faſciculus* of nerves which take that courſe. The limb was wholly deprived of ſenſation and motion, and finding no pulſation at the wriſt, we concluded the *brachial* artery was divided; but the *hæmorrhage*, which at firſt was very profuſe,

profuſe, was ſtopped by the retraction of the veſſel, and having his arm confined to his ſide. Had not the drunken condition the patient was in, and the violent contuſion of the parts ſurrounding the joint, diſcouraged us, we ſhou'd have thought it right to have propoſed immediate amputation of the arm at the joint; but under ſuch forbidding circumſtances, it appeared too raſh and dangerous an attempt. The accident happened in the evening, and till the morning following, there was a conſiderable degree of heat diffuſed throughout the limb, which next morning, in different parts, began to appear diſcoloured, emphyſematous and gangrenous; by noon it was totally dead to the fingers end, and the patient expired that day about ſix in the evening. Next morning we examined the limb, found the artery quite divided, having the ſuperior end retracted into the *axilla*, and ſeparated more than an inch from the inferior; and it then evidently appeared to us, that the hook had included and injured the bundle of nerves, as there was reaſon to believe at firſt. In this ſhort ſpace of time, the limb was become ſo putrid, that

we cou'd not bear to ſtand over it, to make the neceſſary examination, till the ſtench was corrected, by well waſhing it with warm vinegar and brandy.

Of a partial wound in an artery producing one ſpecies of the aneuryſm.

WOUNDS of the arteries naturally lead us to ſay a word or two concerning *aneuryſms*. When one or two of the three coats of an artery are wounded, and the wound healed, the other, by the propulſion of the blood, may be gradually dilated and protruded, ſo as to form a bag. Under theſe conditions, the pulſation will be plainly felt in the tumor, till it is increaſed to a conſiderable magnitude, in which the blood may ſometimes acquire by ſubaction a laminated, leathery ſubſtance, as it frequently does in the true *aneuryſm*, from the gluten of the blood. The tumor, in conſequence of ſuch a partial wound, is ſmall in the beginning, and generally makes a ſlow progreſs; whilſt it is of a ſmall ſize, the blood remaining in a ſtate of fluidity, may be forced into the artery, but it will return as ſoon as the preſſure is removed, the tumor appearing again. In this ſtate the ſkin commonly retains its natural color, but afterwards, when the tumor is enlarged,

it

it often has a duſkiſh red or livid hue. The kind of wound now under conſideration, produces a mixed ſpecies of *aneuryſm*, compounded of the true, which is a dilatation of all the coats of an artery, and of the falſe, by having one or more of them wounded. It is a caſe that rarely occurs, but may happen in bleeding.

Of the true and falſe aneuryſm, &c.

As a dilatation of the artery alone conſtitutes the true *aneuryſm*, the tumor is generally more oblong than in the mixed kind, and both muſt neceſſarily be more circumſcribed than the falſe, proceeding from a perforation of all the coats of that veſſel; under which circumſtance the blood, in a ſhort time, is frequently diffuſed far about. In this caſe the ſmall aperture of the teguments cloſing, the blood may readily eſcape out of the artery, inſinuating itſelf into the cellular membrane and interſtices of the muſcles, ſometimes raiſing a ſwelling in the parts quickly, turning the ſkin of a ruddy or livid color. This tumor increaſes faſter or ſlower, according to the reſiſtance the blood meets with; it yields but little to preſſure, ſcarce any pulſation is to be felt, when of any con-

ſiderable, duration or ſize, and, unleſs ſeaſonably prevented, the limb will be brought into imminent danger. This accident has often happened, by bleeding in the lower vein of the arm, called the *baſilic*, where the pulſation of the adjacent artery is conſpicuous, in ſome arms: and it has been obſerved, by accurate Anatomiſts, that when the brachial artery divides before it approaches the joint, the ulnar and radial branches of it run more ſuperficially, than when the diviſion is at, or juſt below the joint as uſual.

As a ſpurious or falſe *aneuryſm*, as this is termed, may proceed from an internal cauſe, as acrid matter eroding the coats of the artery; ſo may a true one ariſe from a contuſion, or other external injury, weakening them and making them liable to diſtention, by the impulſe of the blood. (*a*)

When

(*a*) Theſe authorities may be conſulted among others, in reſpect to the various kinds of *aneuryſms*.

Wiſeman's obſervations upon *aneuryſms*.——*Macgill's* hiſtory of an *aneuryſm*, and Profeſſor *Monro's* remarks upon that ſubject, concerning the formation of an *aneuryſm*; Med. Eſſ. vol. 2.——Doctor *Hunter's* obſervations upon the ſame ſubject, in the *London* Med.

Of wounds of the veins.

WHEN veins are wounded, the blood does not flow with that impetuosity and saltation, as when proceeding from an artery, but in an equal stream; nor is venal blood so florid as arterial, which is also a mark of distinction to be considered in these wounds.

Of wounds of the lymphatics.

WHEN the *lymphatics* are wounded, they discharge a fluid resembling water, which sometimes become acrid, eroding the neighbouring parts. It often proves troublesome to stop the discharge from these fine pellucid tubes, which now and then happen to be divided in bleeding, without any fault

Med. Obs. and Inqs. vol. I. II.——Mr. *Warner's* observations on two femoral *aneurysms*, in the third edition of his very useful cases in surgery.——*Mem. de l'Acad. roy. de Chirurgie.*——*De Haen de aneurysmatibus Rat. Med.*——*Morgagni de sedibus & causis morborum.*——*Marcus Aurelius Severinus, de efficaci medicina.*——*Lancisius de motu cordis, & aneurysmatibus*——*Fernelius, Marchetti & Ruysch* speak of having observed enlargements of the ventricles of the heart; which was also found to be the case of his late Majesty, attended with a rupture of the right ventricle, whence proceeded his sudden death.——Doctor *Hunter* shews in his anatomical courses several *aneurysmal Aortæ*, accompanied with caries of the ribs and *Sternum*.——*Ruysch* has observed the like.——What Doctor *Friend* has written concerning *aneurysms* in his History of Physic, where he treats of the Surgery of *Paulus Ægineta*, claims an attentive reading.

fault in the operator, or poſſibility of avoiding them, as they cannot be diſcerned when they accompany the vein, lying in the way of the lancet. I have met with an accident of this nature three or four times.

Of wounds of the glands.

WOUNDS of the glands are not generally attended with threatening ſymptoms; but they are rather more diſpoſed, from the texture of the parts, to produce ill-conditioned fungous fleſh, and the diviſion of their lymphatics or excretory ducts, may make the cure prove tedious and troubleſome, as I have obſerved, on account of a large watery diſcharge, that ſometimes enſues; and, according to the reſpective uſes of the fluids, which the glands ſecern, the animal œconomy may ſuffer by their being wounded.

Of wounds of the nerves.

WHEN a nerve is punctured, or divided only in part, a variety of alarming ſymptoms generally ſupervene, in proportion to the tenſeneſs of it, and firmneſs of the parts it is attached to; and it is not unreaſonable to ſuppoſe there may be ſomething conſtitutional, in the production of the ſymptoms, to a greater or leſſer degree,

as

as there is a manifeſt difference of irritability and ſenſibility in different perſons. When a nerve happens to be partially divided, the undivided fibres having its whole contractile force to ſuſtain, it muſt conſequently be more irritated, and attended with a greater degree of pain, which ſenſation ſometimes is not ſo violent at firſt, as to demand particular notice, though at other times it is, and often extremely acute; throwing the whole nervous ſyſtem immediately into diſorder, requiring a total diviſion of the nerve to appeaſe the orgaſm. In a total ſeparation of a conſiderable nerve, though the ſymptoms will be leſs ſevere, under that circumſtance, yet more pain may be felt above, at ſome diſtance from the wound, than in the wound itſelf, from a divulſion of the fibrils of the reſilient part of the nerve: and ſhou'd a principal branch be divided, the inferior parts that were ſupplied from it, having loſt their communication with the brain, will be deprived of ſenſation and motion; by which, nutrition will alſo be impaired; the nervous influence being found neceſſary to that purpoſe. Though the wound itſelf may

deceive

deceive the eye, and have the reſemblance of a ſimple wound, the ſymptoms, ſooner or later, will declare what part has ſuffered: and ſometimes a corroſive ichor iſſues from the wound, excoriating the part it falls upon. Obſtructions in the capillary veſſels, creeping along the membranes, which envelop the nerves, or that are ramified in the univerſal connecting ſubſtance, the *membrana celluloſa*, may ſoon occaſion an inflammation in thoſe parts. Theſe concurring cauſes may be productive of direful effects, as intenſe pain, fever, inflammation, gangrene, delirium, and convulſions, ſoon bringing the limb into danger, and death may cloſe the diſmal ſcene, unleſs prevented by the utmoſt care and early attention. *Hippocrates*, *Paré*, and other obſervators, ancient and modern, relate many fatal conſequences from wounds of the nerves.

When a tendon is punctured, almoſt the ſame formidable ſymptoms may follow, as in the puncture of a nerve, which has often been the conſequence of bleeding, from wounding the tendon of the biceps muſcle, or perhaps more frequently, the tendinous expanſion of that muſcle, which goes

goes off from the tendon in a narrow compaſs, juſt below the bend of the arm, under the median vein, ſoon expanding over the muſcles of the cubit, bracing them together to aſſiſt their action. Sometimes, upon this accident, the pain does not come on immediately to an intenſe degree, but gradually extends upwards, according to the courſe of the muſcle, and of the tendinous expanſion downwards, attended with tenſion and inflammation, depriving the arm of flexion, or of both flexion and extenſion. (*a*) When the tendon is partially divided, the wound is accompanied with more pain, than when totally ſeparated; for the ſame reaſons, as aſſigned in conſequence of wounds of the nerves. Shou'd the tendon be quite cut through, by the contraction of the muſcle, of which it

(*a*) When the King of *France* had a tendon punctured in bleeding, *Paré* ſays he inſtantly complained of pain upon the entrance of the lancet, and that his whole arm ſwelled immediately, and became very painful, yet was happily cured in three weeks, by the common treatment, under the direction of that eminent and experienced Surgeon.——In this caſe, ſemi flexure is the proper poſition to keep the limb in, the muſcles being then in a ſtate of relaxation.

it is a part, the end neareſt it, if it is a long muſcle, will be far retracted under the adjacent parts, and the muſcle loſe its uſe, till the wound is healed, when, by means of the intermediate ſubſtance, furniſhed by nature, with the aſſiſtance of art, as we ſhall ſhew hereafter, the power of the muſcle may be reſtored.

Of wounds of the membranes and ligaments.

THE ſymptoms attending wounds of the membranes, and ligaments, ſurrounding the joints, have great affinity to thoſe accompanying wounds of the nerves and tendons. *Hippocrates* tells us of two perſons, who died convulſed from ſuch wounds of their feet. Many other melancholy inſtances might be mentioned, upon good authority; ſome I have ſeen. We may conſult that truly great and experienced Practitioner, Serjeant *Wiſeman*, upon this occaſion.

THOUGH the tendons, membranes and ligaments have but little ſenſibility in a ſound ſtate, yet when wounded, and become inflamed, they grow moſt exquiſitely ſenſible

ſenſible and painful, as daily experience evinces.——Baron *Haller's* treatiſe of irritability and ſenſibility rather tends to miſlead practitioners; but in order to obviate ſuch inconveniences, as might ariſe from implicit faith, in what he therein advances, as he is one of the greateſt Phyſiologiſts of the age, the late Profeſſor *Whytt's* anſwer to that treatiſe ſhou'd be read, by all means.

Baron *Haller* was Profeſſor of Phyſic, &c. at *Gottingen*, and *Whytt* a very eminent Profeſſor at *Edinburgh*. The Baron retired to *Bern* in *Switzerland*, upon his Britannic Majeſty's *German* Dominions becoming the ſeat of war, where he is writing a voluminous Phyſiological Work; and he is alſo engaged in the ſtate as well as in his profeſſion.

Of

Of prognoſticks in

WOUNDS.

What diſtinguiſhes a regular experienced Surgeon from a quack.

NOTHING more truly diſtinguiſhes a rational, regular, experienced Practitioner from a quack, than his making a right prognoſtick, or prediction of the event of a diſeaſe. This kind of foreſight makes him looked upon as a ſort of prophet, and does him great honour; but then it is neceſſary for him to proceed very cautiouſly, leſt he ſhou'd err in his judgment, in a point of ſuch conſequence to his character.

Hippocrates's wiſdom in reſpect to making prognoſticks.

Hippocrates ſeemed to be truly ſenſible of this, when he expreſſed himſelf thus. "Whoever wou'd aſk pertinent queſtions, "and anſwer judiciouſly thoſe propoſed, re- "futing objections as much as poſſible, "muſt well conſider the cauſe of the di- "ſeaſe, what reaſon there is to believe it "will have a good or bad event, be of long "or ſhort duration; and, in wounds, whe- "ther they will prove mortal or not; "which are of good, and which of bad preſage,

" preſage, which doubtful in their ſucceſs;
" and whether the uſe of the limb will be
" preſerved or not, &c." Or as *Celſus* has it more conciſely. " Above all, a Surgeon
" ought to know what wounds are cura-
" ble, what are eaſy, and what difficult to
" cure."

What is expected from Surgeons in reſpect to prognoſticks in wounds.

FROM the venerable authorities of antiquity, we ſee it was expected, that Surgeons, in thoſe days, ſhou'd pronounce, whether the patient wou'd recover or not; whether the cure wou'd be eaſy or difficult; if it wou'd prove a ſhort or tedious work; if it wou'd be a perfect or imperfect cure; in what condition he might be afterwards, or what infirmity or diſeaſe might remain; and leſs cannot be required in theſe modern, and more enlightened times. However, as few people are endowed with fortitude of mind enough, to bear unfavourable predictions, without being too much affected, the prudent Surgeon will therefore act with great circumſpection on this occaſion, and rather acquaint the patient's relations or friends, with the danger he apprehends him in, as the moſt effectual means of guarding

guarding againſt cenſure; giving the patient reaſonable hopes at the ſame time, which may prove the beſt cordials to the afflicted.

How to make prognoſticks in wounds.

In order to regulate our judgment in prognoſtication, we muſt conſider, what wounds are mortal, and what not, with the various ſpecies of them. Thoſe deemed mortal, as we have obſerved in the general diviſion, are either ſuch as cannot be cured by art, or ſuch, as left to themſelves wou'd certainly deſtroy the patients, yet, by the aſſiſtance of a ſkilful hand, may be cured. It is a matter of great difficulty and nicety, to preſage the patient's fate; for we have ſurpriſing accounts tranſmitted to us, and well authenticated, of the recovery of perſons, without the leaſt proſpect of a favourable event; and our own obſervation and experience will confirm it. *Hippocrates* pronounces the doom of thoſe, who are wounded in the brain, medulla ſpinalis, heart, liver, diaphragm, bladder, and lungs, when more air comes out of the wound than enters the lungs by the trachea; he alſo ranks wounds of the large veſſels of the lungs,

Hippocrates's denunciation in wounds.

lungs, and of the neck, and large tranſverſe wounds of the ſtomach and inteſtines, among thoſe of a mortal nature, but ſays, when ſmall and longitudinal in the ſtomach and inteſtines, ſome may eſcape (*a*). *Celſus* agrees with *Hippocrates*, adding ſome ſpecifications, in reſpect to the wounded parts; but their ſentiments concerning the mortality of wounds admit of farther conſideration.——*Boerhaave's* manner of determining this important point is more methodical than any other; he divides mortal wounds into five diſtinct claſſes; the firſt is when the influx of the *liquidum nervoſum*, or other nervous influence, whatever it is, operating upon the heart, on which its motion depends, is obſtructed, and which impediment may ariſe from four cauſes. (*b*)

Boerhaave divides mortal wounds into five claſſes.

Of the firſt claſs of mortal wounds.

(*a*) In coacis prænotionibus.

(*b*) As we know, by obſervation, the effects of injuries done to the brain and nerves, it is to no purpoſe in Surgery to embrace any hypotheſis or doctrine concerning thoſe parts. The greateſt philoſophers and phyſiologiſts are divided in their opinions, ſome are advocates for animal ſpirits, or the nervous fluid; others for vibration, conſidering the nerves as elaſtic cords; and ſome admit of electrical fire, collected by the body, making the nerves the conductors of it, to carry on the wonderful communication and intelligence, which we obſerve, between them and the brain, the body and the mind; but this abſtruſe ſubject

The firſt cauſe of the heart's being deprived of the nervous influence.

THE wounds that more immediately produce this fatal effect, are thoſe of the *cerebellum*, or *medulla oblongata*, between which there is a ſtrict and mutual communication, and whence nerves are diſtributed to the heart, and other parts upon which vital action depends. I believe we have not an inſtance upon record, of a perſons recovering of a wound in thoſe parts; but wounds of the brain itſelf have been cured, even when a conſiderable quantity of it has been evacuated, upon the authority of the beſt obſervators, as we ſhall particularly mention hereafter.

See Vieuſſens's neurological experiments.

The ſecond cauſe obſtructing the nervous influence upon the heart.

THE ſecond cauſe that may deprive the heart of the nervous influence and motion, is a preſſure upon the brain itſelf, by a depreſſion of the ſcull, or from ſome other cauſe. The lodgment of blood or other fluid may eaſily affect the brain by compreſſion,

ject ſeems now no better underſtood, than it was in the great *Steno's* time, who, in his lecture upon the brain, makes a beautiful and ingenuous confeſſion of ignorance, in reſpect to the nature and operation of that curious organ, which perhaps will ever remain beyond the comprehenſion of man's underſtanding.—*Nemo ſcit quantum neſcit.*

preſſion, as it uniformly fills its boney caſe; or by ſtimulus or eroſion, as they are apt to become putrid and acrid by heat and confinement, producing, ſooner or later, fatal effects. *Hildanus*, *Tulpius*, *Bohnius*, *Schenkius*, and other obſervators, furniſh us with a variety of caſes to this purpoſe: and innumerable inſtances might be produced, of extravaſations on the ſuperior parts of the enveloping membranes of the brain, cured by trepanning, and evacuating the ſtagnant fluid.

The third cauſe that may interrupt that influence.

The third cauſe that interrupts the nervous influence upon the heart, is a wound in the ſuperior part of the *medulla ſpinalis*; becauſe, *that*, the *medulla oblongata*, *cerebrum* and *cerebellum* have an intimate connection. It is common in anatomical experiments, in order to kill the animal inſtantly, to thruſt in a ſharp inſtrument between the *vertebræ* near the head; and *Sennertus* ſpeaks of a butcher that uſed to kill his beaſts in that manner. For the moſt part, injuries done to the inferior parts of the *ſpinal* marrow prove mortal, as we may learn from *Tulpius*, *Bohnius*, and

The Sardinian butchers ſhew their humanity in killing their beaſts with unerring dexterity by dividing the ſpinal marrow, at one ſtab, between the firſt and ſecond vertebra of the neck.

others ; at leaſt the lower extremities become paralytic, as I have ſeen.

The fourth cauſe that may interrupt the nervous influence.

THE fourth cauſe of the ceſſation of the motion of the heart, for want of a nervous influence, proceeds from the *cardiac* nerves being wounded ; but it is ſcarce poſſible, that theſe nerves ſhou'd be wounded, without opening blood-veſſels, the conſequence of which alone wou'd be death inevitably. (*a*)

Of the ſecond claſs of mortal wounds.

THE ſecond claſs of abſolutely deadly wounds conſiſts of thoſe, which penetrate either the *auricles*, or *ventricles*, of the heart, allowing a paſſage for the blood to flow out of it ; for the continual motion of the heart hinders *reunion* ; and even in ſuperficial wounds, when the blood falls into the *pericardium* and cannot get out, the heart being compreſſed by that means, a ſtop will ſoon be put to its motion, and a period to life, which is confirmed by many writers, as *Foreſtus*, *Schenkius*, *Bohnius*, *Bartholine*, *Blegny*, *Diemerbroeck*, *Bonetus*, *Vidus Videus*, *Paré*, *Horſtius* ; and many obſervations,

(*a*) Vid. Lower de Corde.

tions to the ſame purpoſe are to be met with in the *Miſcellanea curioſa*. (*a*)

Of the third claſs of mortal wounds.

In the third claſs of wounds of a mortal nature, are included thoſe inflicted in parts, that cannot poſſibly have applications made, to reſtrain the effuſion of blood; as deep wounds in the lungs, &c. having large veſſels opened, of which, we have examples in *Timæus*, *Bohnius*, &c. There are inſtances of the recovery of patients of wounds in the lungs, recorded by *Stalpart*, *Vander Wiel*, *Schenkius*, and others: and it has ſometimes happened, that conſiderable pieces of the lungs have been cut off, yet the patients have recovered, as we may read in *Hildanus*, *Tulpius* and *Ruyſch*, who tied a ligature about the protruded part before exciſion of it, in order to prevent a *hæmorrhage*. (*b*)

In the lungs.

LARGE

(*a*) Upon the authority of *Bartholine*, *Schenkius*, and others, we have inſtances of perſons living, walking and ſpeaking for a ſhort time, after receiving a wound penetrating one or both ventricles of the heart. And it is well known, from experiments, that ſome animals will live and move a long while after taking out their hearts.

(*b*) When the great General *Wolfe* fell, and left much to fame, at the taking of *Quebec*, it was currently reported, that another brave Officer, who accompanied him in that expedition, was ſhot through the

In the liver.

LARGE wounds in the liver are a kin to thoſe in the lungs, and the branches of the *vena cava*, or *portarum*, are followed with like fatal conſequences, when wounded, as attend opening the *pulmonary* veſſels, which may be obſerved in *Timæus*, *Schenkius*, *Bohnius*, &c. Smaller ones of this part have been cured, as we may learn from thoſe authors; and we have a remarkable hiſtory of a wound in this bowel, related by *Hildanus*, in his epiſtle to *Sennertus*, which ended happily.

In the ſpleen.

THE ſpleen has the largeſt arteries, in proportion to its ſize, of any *Viſcus* in the body, except the heart, and through its middle runs a *ſinus venoſus*; therefore, when they are opened, wounds of the ſpleen are to be deemed mortal; yet we have reaſon to believe, there is a poſſibility of preſerving the patient's life, by a total exciſion of it, as was verified a few years ago, in the caſe of one of Sir Robert *Rich's* dragoons, who was wounded at the battle

Hiſtory of an extraordinary caſe.

of

the *Thorax*, and had the wound cured, after cutting off a piece of the lungs, protruded in a mortified ſtate.

of *Dettingen*, and left all night in the field weltering in his blood, with the ſpleen hanging out of his body, in a mortified ſtate: next morning he was carried to the Surgeon, who immediately extirpated it, after tying a ligature round the large veſſels; and the patient recovered to be able to do duty in the regiment. Doctor *Monro*, Phyſician to St. *George's* Hoſpital, told me, he had the hiſtory of this remarkable caſe from the Surgeon himſelf, who is a man of great veracity.——This operation has been frequently performed upon dogs, by way of experiment, and they have ſurvived with but little apparent detriment to their healths, or their vital or animal functions, except growing rather fat and lazy afterwards.—— *Foreſtus*, *Purmannus*, *Bohnius*, *Schenkius*, &c. may be conſulted concerning wounds of the ſpleen. (*a*)

WOUNDS

(*a*) Though *Democritus* and others have looked upon the ſpleen as an uſeleſs part, yet, conſidering the large blood-veſſels belonging to it, &c. we may more reaſonably conclude, with other Phyſiologiſts, that it muſt be an organ of much conſequence in the animal œconomy, though they are not agreed about its uſe.—— See Doctor *Stukeley's* learned Lecture, called the *Gulſtonian* lecture, read in the Theatre of the College of Phyſicians, upon this *Viſcus*, in the year 1722; at whoſe requeſt it was printed.——To this excellent lecture is prefixed, the much admired Pindaric Ode upon the ſpleen, by the late Counteſs of *Winchelſea*.

In the kidnies.

WOUNDS of the kidnies may be arranged in the ſame claſs, becauſe of the large emulgent arteries and veins; and the urine, running out of the wound when it happens to penetrate the *pelvis* of the kidney, may prove an obſtacle to its coalition: however ſome wounds of the kidnies have been cured, as we ſee in *Fallopius*, *Foreſtus*, and other authentic writers; and I have been a witneſs of the ſame. We have the extraordinary caſe of Conſul *Hobſon* at *Venice* handed down to us, upon whom *Nephrotomy* was ſucceſsfully performed, by the celebrated *Marchetti*, Profeſſor of medicine at *Padua*. (*a*)

Conſul Hobſon's caſe.

In the pancreas.

WOUNDS of the *pancreas* are to be concluded mortal, if its *duct* or blood-veſſels are injured, whence the *ſuccus pancreaticus*, or blood, may be diſcharged into the cavity of the *abdomen*, and there putrefying, cauſe inevitable death; beſides, as the ſituation of the *pancreas* is under the ſtomach, it cannot

(*a*) It is not improbable, that *Marchetti* might be directed in this operation by a tumor upon the *lumbar* region. The wound was not perfectly healed, but only a ſmall fiſtulous opening remained, diſcharging a very little matter, having an urinous ſmell.

not eaſily be wounded, without the weapons paſſing through this organ alſo.

In the omentum.

WOUNDS of the *omentum* are of the mortal kind; for *that* having conſiderable ramifications of veſſels upon it, which may be divided by the thruſt of a ſword, or other weapon, the effuſed blood, falling into the cavity of the *abdomen*, will kill the patient, unleſs it be evacuated by ſome means, or taken up by abſorption.

In the meſentery.

WOUNDS of the *meſentery* generally prove mortal. This part is full of *glands* and *lymphatics*, and furniſhed with arteries and veins in abundance, running to and from the *inteſtines*, with collateral veſſels diſperſed in it; upon cutting of which, ſuch an effuſion of blood will enſue, as may ſoon deſtroy the patient, by filling the cavity of the *abdomen*. *Bohnius* relates ſome remarkable caſes of this ſort. And wounds in this part may prove mortal, independent of any other cauſe, than the *meſenteric* nerves being injured, which have a great influence upon reſpiration, and the vital functions.

In the ſtomach and inteſtines.

WOUNDS of the ſtomach and inteſtines come under the ſame denomination, they being

being plentifully ſupplied with conſiderable blood-veſſels, eſpecially the ſtomach; but there are many inſtances upon record, of wounds in theſe parts having been cured: thoſe in the large inteſtines are not ſo dangerous, as wounds in the ſtomach, and ſmall inteſtines. The *periſtaltic* motion of theſe parts is a great impediment to healing of theſe wounds; and the nerves ſuffering may alſo be attended with very bad conſequences. More will be ſaid to this purpoſe, under that claſs of wounds, which deprive the body of nutrition.

In the uterus.

THE *uterus*, in a virgin ſtate, is ſmall, and never after geſtation returns to its original ſize; but when impregnated and diſtended, the blood-veſſels enlarge in proportion, and wounds in it become more and more dangerous, on account of the *hæmorrhage*; for the veſſels in an unimpregnated ſtate of the *uterus*, that will ſcarce admit of a briſtle, will be dilated to the ſize of a ſwan's quill, or more, before delivery; and ſhou'd the *uterus* then be wounded, a fatal effuſion of blood wou'd probably enſue, occaſioned by diſtention of the part with the

fœtus,

fætus, preventing its contraction, neceſſary to cloſe the mouths of the veſſels; but if the excluſion of the *fætus* happens ſoon after the wound is inflicted, there is reaſon to hope the contraction of the *uterus* ſhou'd conſtringe the patent veſſels, and prevent a mortal *hæmorrhage*, from what has been obſerved in the ſucceſs of the *cæſarian* operation.

In the bladder.

WOUNDS of the bladder have been pronounced mortal, and incapable of healing, by *Hippocrates* and other ancient Writers, ſuppoſing it to be an exſanguous part; but daily experience proves the contrary, in cutting for the ſtone. There is danger of a profuſe or mortal *hæmorrhage*, in accidental wounds, upon dividing ſome conſiderable branches of the *iliac* arteries, running along the neck of the bladder, which ſometimes cannot be eaſily come at with a ligature, nor the *hæmorrhage* ſtopped by any other means. We may read what *Bohnius*, *Fallopius*, *Tulpius*, *Schenkius*, &c. ſay upon wounds of this part. (*a*)

WOUNDS

(*a*) I once knew a fatal *hæmorrhage* in conſequence of lithotomy, that happened a few hours after the operation,

The consequences of wounding the Aorta and its large branches.

WOUNDS of the *Aorta* are equally as mortal, as thoſe that penetrate the ventricles of the heart; and we cannot heſitate to pronounce the ſame fate will attend thoſe who have the *ſubclavian*, *vertebral*, or *carotid* arteries opened, where we cannot have acceſs to them. When the *carotid* is opened, in the middle of the neck, by a large longitudinal wound, or if ſmall, when properly enlarged, there may be a poſſibility of conveying ligatures above and below the aperture, which may prove the means of ſaving the patient's life; or ſhou'd it be opened too near the head to put this method in practice, it may be worth while, to try what preſſure, upon ſome ſoft fungous ſubſtance, or upon an *eſcharotic*, will do; having a ſucceſſion of underſtanding aſſiſtants, if they can be procured upon ſuch an emergency, to relieve each other, and maintain a due and regular compreſſion, with their fingers, as long as ſhall be found neceſſary, though it ſhou'd be ſome days and

ration, which was well performed, and without any difficulty, or effuſion of blood in it worth notice, that cou'd not be ſtopped by the utmoſt care of two able Surgeons.

and nights; and, to make the force the more equable, ſome ſolid body, well adapted, ſhou'd be placed next the compreſs. It is better for the Surgeon's own ſake to try theſe doubtful means, rather than ſuffer the patient to periſh without any attempt to ſave him, even though they ſhou'd prove fruitleſs. Any other large branches of the *Aorta*, that cannot be come at, as the *meſenterics*, *epigaſtrics*, *hypogaſtrics*, &c. when wounded, will prove fatal; and nothing leſs is to be feared from wounds of the large veins, as the *venæ cavæ*, *vena port. ſubclavians*, &c. for they will ſoon pour out more blood, than the patient can bear without loſs of life. (*a*)

In

(*a*) In diſſecting out a large incyſted tumor, deeply ſituated in a dog's neck, that was a very ungovernable patient, I wounded the *carotid* artery, which bled with great impetuoſity; but I effectually reſtrained the *hæmorrhage* by paſſing a ligature as directed, and cured my patient; who ever after retained an angry remembrance of the operation, and wou'd not be reconciled to me.

It is a memorable and melancholy hiſtory that *Boerhaave* relates of a young man, who had a ſword thruſt through his neck between the fourth and fifth *Vertebra*, by which the *vertebral* arteries were divided, and lived nine or ten days either in a *ſyncope* or *hæmorrhage*.

Of the fourth claſs of mortal wounds.

In the fourth claſs of wounds which neceſſarily prove mortal, are thoſe that entirely ſtop reſpiration; which may happen ſeveral ways, as by a diviſion of the *larynx*; by large wounds of the *trachea* or *bronchia*; by wounds, penetrating both cavities of the *thorax*; and wounds of the *diaphragm* generally are attended with no happier event.

In the trachea.

If the *trachea* is quite divided near the *clavicles*, and the lower part of it retracted beneath them, by the natural power of the part and the weight of the lungs, there is no poſſibility of bringing the ends of the divided part together, conſequently ſuch a wound muſt prove mortal; but when it is divided near the middle of the throat, it is not abſolutely incurable.—

Hiſtories.

Profeſſor *Monro* inſtances the caſe of a lunatic, who cut his own throat in ſuch a manner, that no air paſſed by the mouth, yet the parts were brought together and ſtitched, and the wound healed. *Tulpius* relates a ſimilar caſe. *Bartholine* and *Paré* have ſome ſuch. *Van Swieten* and *Heiſter* mention caſes, where part of the *trachea* was carried away with a ball, the patients recovering by proper treatment.——Theſe happy

happy events ſhou'd encourage *bronchotomy*, upon urgent occaſions, when the patient is in immediate danger of ſuffocation, as it is an operation neither difficult to perform nor dangerous. (*a*)

In the bronchia.

LARGE wounds of the *Bronchia*, which are the diviſions or branches of the *Trachea*, or *Aſpera Arteria*, will produce fatal effects, and it is ſcarce poſſible, that they ſhou'd be wounded, and blood-veſſels in the lungs eſcape. We may recollect what was ſaid before from *Hippocrates*, who includes thoſe of the lungs among mortal wounds, when more air paſſes out through the aperture, than enters them through the *glottis*, or *rimula* of the *larynx*. If there is a large opening on each ſide, into the cavity of the *thorax*, the air ruſhing in at once, will ballance that within the lungs; conſequently they will be left to their own contractile force, and collapſe and compreſs their blood-veſſels, obſtruct the circulation,

and

(*a*) See Les playes du la rynx & de la trachée, &c. en mem. de l'acad. roy. de chirurg. tom. 1.

History of a case from the act. medic. Berolin.

and cause suffocation and death. It was to this collapsion of the lungs, upon the passing of the air into both sides of the *thorax*, though none of the *viscera* or blood-vessels suffered, that the Physicians in the *act. medic. Berolin.* attributed the death of a man, who was wounded by a broad sword thro' the *mediastinum*. (*a*)

In the diaphragm.

As the *diaphragm* is one of the principal agents in respiration, wounds in it must be attended with imminent danger, though not always mortal. Small wounds in the fleshy parts of this compound muscle have been cured, as we may observe in *Diemerbroeck, Schenkius* and others; but wounds in the tendinous parts of it are deemed incurable. The abdominal *viscera*, which are constantly exposed to a considerable pressure,

(*a*) *Vesalius* used to demonstrate this fact, in his anatomical lectures, by first opening one side of the *thorax* of a pig, by which that lobe of the lungs left off playing, then doing the same on the other side, the animal wou'd soon have expired; but by sucking out the air, and shutting up the apertures, death might be prevented.——Read the experiments of Doctor *Houstoun* and others in comment. *Van Swiet.* in aphorism. *Boerhaavii* § 170.

preſſure, may be forced through wounds of this part into the *thorax*, as *Paré*, *Sennertus* and others teſtify. The diviſion of the *phrenic* nerve may deſtroy the action of the *diaphragm*, and alſo immediately affect the motion of the heart, which receives branches from it.

The fifth and laſt claſs of mortal wounds.

THE fifth and laſt claſs of wounds, that art cannot cure, are ſuch as deprive the body of nutrition, by preventing the paſſage of the food into the ſtomach, the preparation of chyle, and the conveyance of it into the blood; which we ſhall conſider in order, according to the courſe of the aliment.

In the OEſophagus.

1. WHEN the *Œſophagus*, or canal by which the food paſſes into the ſtomach, is totally divided, its ends recede from each other, and cannot be kept together; conſequently death muſt inevitably enſue: and the effect will be the ſame, when a large wound, particularly a tranſverſe one, happens in it, after its entrance into the *thorax*; but when not totally divided, before it enters that cavity, it has been cured. We have many hiſtories of ſuch cures having

been performed from *Peyerus*, *Bohnius*, *Schenkius*, &c. and ſome ſuch inſtances might be produced of our own knowledge. Profeſſor *Monro* gives a narrative of a perſon, who cut his own throat ſo that the aliment paſſed out at the wound, before it was ſtitched and dreſt, and he was in great danger of being ſuffocated, by its falling into a correſponding wound in the *Trachea*, notwithſtanding the utmoſt endeavours to prevent it; yet he recovered, by the obſervance of an exact regimen, diet, &c. as we ſhall direct herefater, in the method of cure.——*Benedictus Bonacurſius* ſays he cured a perſon, who cut his own throat in priſon, making a large wound both in the *Trachea* and *Œſophagus*. (*a*)

See caſe at the concluſion of the cure of wounds of the trachea and œſophagus.

2. Wounds of the ſtomach are of a mortal nature, by allowing the aliment to fall

(*a*) See Diſſertation *par Monſ. Verdier en Mem. de l'acad. roy. de chirurg.* tom. 3, in which are contained the opinions of many great men, beſides his own, upon this ſubject; as *Galen*, *Paré*, *Tulpius*, *Veſalius*, *Bartholinus*, *Stalpart*, *Vander Wiel*, *Palfin*, *Saviard*, *Dionis*, and his excellent commentator *Le Faye*, *De la Motte*, *Garengeot*, *Ferrein*, &c.

fall into the *abdomen*, by deſtroying its function and depriving the body of nouriſhment; but the more immediate danger lies in dividing the blood-veſſels and nerves, which are diſtributed upon it in great plenty; and ſometimes a wound in this organ cauſes ſudden death, as we learn from *Hippocrates*, *Foreſtus*, *Timæus* and others.——*Crollius* tells a ſtory of a *Bohemian* Peaſant, who uſed wantonly to conceal a knife in his throat, ſo as no body cou'd ſee it: however, at laſt his trick had like to have proved fatal to him; the knife ſlipt into his ſtomach, and after ſome weeks, being felt outwardly, an inciſion was made, thro' which it was extracted, and the wound healed.——*Jeſſenus* has recorded a memorable hiſtory of a man at *Prague*, who ſwallowed a knife, which made its own way through the ſtomach and *abdomen*, ſome weeks after, and ſays, that he recovered. He alſo ſays, he ſaw a man, belonging to the Court at *Paris*, who voided a knife at the groin, nine months after it was ſwallowed.——*Laurentius Joubertus* relates a caſe of this nature, where a knife remained two years in the patient's body.——*Diemerbroeck*

Hiſtory from Crollius.

gives a more ſurpriſing hiſtory of ſuch a caſe; and the knife, which is ten inches long, was extracted after cutting upon it, and is kept among the rarities in the anatomy chamber at *Leyden*, with the teſtimonial of the Magiſtrates, &c. of the City of *Koningſburgh*, to that Univerſity, verifying the fact, and the patient's recovery. (*a*) As there are, beſides theſe, more inſtances, well atteſted, of large wounds in the ſtomach having been cured, as we ſhall mention hereafter, in the method of treating wounds in this part, they are not to be deemed abſolutely mortal.

In the ſmall inteſtines.

3. A TOTAL diviſion of the ſmall inteſtines, is to be looked upon as a mortal wound, by ſuffering their contents to be diſcharged

(*a*) This operation was performed in the preſence of a great many Phyſicians, Surgeons, and others, by Doctor *Daniel Schwaben*, a famous Phyſician, Surgeon, and Anatomiſt: and for performing ſucceſsfully ſuch wonderful operation, he was appointed Surgeon in ordinary to the King of *Poland*, and had ſignal honors conferred upon him, and his family, by royal mandate. The hiſtory of this caſe was publiſhed at large by Doctor *Daniel Becher*, Profeſſor of Phyſic in the Univerſity of *Koningſburgh*, and chief Phyſician to *Uladiſlaus* then King of *Poland*.

diſcharged into the cavity of the *abdomen*; by which death muſt neceſſarily enſue, unleſs the ends can be brought into contact and ſtitched together, or the ſuperior end can be made to grow to the margin of the wound of the teguments, &c. by ſtitching, or any other expedient; for by this means an opening may be preſerved for the exit of the inteſtinal contents, promoted by the periſtaltic motion; but even in that caſe, ſhou'd the diviſion of the inteſtine be near the ſtomach, chyle wou'd be wanting, for nutrition of the body, and the wound in conſequence end fatally. In wounds, whether tranverſe or longitudinal, in theſe parts, when not totally divided, if they can be conveniently come at, ſtitching is adviſable, as we ſhall direct in the treatment of them, in wounds of the *abdomen* and its contents.

4. Wounds of the large inteſtines, where the canal is, or is not, totally divided, are not ſo dangerous, as thoſe in the ſmall inteſtines, for very evident reaſons; but we have inſtances in writers, and from our own obſervation, of the happy event of

wounds in both parts.——The caſe, recorded in the Philoſophical Tranſactions, by Mr. *Needham*, an eminent Surgeon at *North-Walſham* in *Norfolk*, is very pertinent and ſingular.

In the Receptaculum Chyli & Ductus thoracicus.

5. WOUNDS of the *Receptaculum Chyli*, and *Ductus thoracicus*, muſt be conſidered as mortal, except under the circumſtance, that will be ſpecified hereafter, in the treatment of them, by depriving the body of nutrition; conſequently life cannot long ſubſiſt: beſides, theſe parts eſſentially neceſſary to life are ſo ſituated, that it is hardly poſſible they ſhou'd be wounded, without ſome other principal parts ſuffering alſo. (*a*) (*b*)

Of

(*a*) *Vid. Walæum, Lowerum & Profeſſorem celeberrimum Deleboe Sylvium, de Motu Chyli.*

(*b*) See the great Profeſſor *Monro's* deſcription of the *Receptaculum Chyli & Ductus Thoracicus* at the end of the 5th edition of his *Oſteology*, &c.

Of ſuch wounds as when leſt to themſelves may prove mortal, though not ſo in their own nature.

Now we are to conſider the ſecond ſort of mortal wounds, or thoſe, which, left to themſelves, without aſſiſtance from art, wou'd inevitably kill the patient, but with it, may be cured.

Of wounds that prove mortal without aſſiſtance from art.

1. WOUNDS of the head, attended with an extravaſation of blood, or lymph, upon the *Encephalon*, or a depreſſion of the ſkull, &c. oppreſſing the brain, are of this nature; and, were no means uſed, wou'd certainly kill the patient; yet, by the application of the trepan, the impending danger may be averted; as we ſhall ſhew, when we come to treat of wounds of this part.

In the head.

2. WOUNDS of large arteries and veins, which the Surgeon can come at, are of this claſs.

In large blood veſſels.

3. WOUNDS of the *viſcera*, to which hand and medicine can be applied, are to be

In the Viſ

be brought under this head; as for example, ſuppoſe a wound inflicted with a cutting inſtrument upon the *abdomen*, and a wounded inteſtine preſents itſelf, by ſewing it together it may be cured, but without ſuch treatment, the *fæces* will ſlip into the cavity, and the patient neceſſarily periſh.

Extravaſated fluids muſt be evacuated, or dreadful conſequences will enſue.

4. When extravaſated fluids are contained in any of the three cavities, they wou'd infallibly occaſion death, without evacuation of them; as by the trepan, when in the head; by the operation directed in the *Empyema*, when in the *thorax*; and by *paracenteſis*, when contained in the *abdomen*: for ſuch fluids, particularly when in the *thorax* or *abdomen*, by the warmth and agitation of the parts, ſoon become putrid and acrid, producing dreadful ſymptoms, as we frequently obſerve. Whenever abſorption happens, it muſt be before they have loſt their natural fluidity.

Wounds curable in their nature may become mortal from various cauſes.

Wounds, curable in their own nature, may have fatal events, from a variety of cauſes; as through a neglect in extracting extraneous bodies, or diſcharging ſtagnant fluids, putrid or tending to putrefaction, eſpecially

pecially when lodged in, or near, vital parts. A hectic fever and maraſmus may be produced by the abſorption of putrid matter; and we have many inſtances of patients who died tabid from that cauſe. *Varicola*, *Tulpius*, *Foreſtus*, *Bohnius* and others, mention ſuch unhappy caſes.

Errors in the Non-Naturals very prejudicial to wounded perſons.

2. ERRORS and irregularities in the Non-naturals, as air, meat and drink, ſleep and watching, motion and reſt, retention and excretion, and paſſions of the mind, often prove deſtructive in their conſequences; of which there are innumerable hiſtorical facts, admoniſhing us to pay the utmoſt regard to them, in the cure of wounds; as we ſhall ſhew under thoſe heads.

Error of judgment or practice or negligence, may be attended with fatal conſequences.

3. THE patient may ſuffer irretrievably by error of judgment, or practice, or thro' the Surgeon's negligence. Miſtakes, not to be remedied, may be committed, by the ableſt practitioners, through inadvertence or inattention; and we have a very memorable example to this purpoſe, where *Hippocrates* took a *fiſſure* of the ſkull for a *ſuture*; in conſequence of which miſtake, trepanning was omitted, till it was too late to ſave the patient's life; but that great and good

Hippocrates's miſtake.

man

man ingenuouſly confeſſed his error. (*a*)—

A mortification from ſtrait bandage.

A mortification, and other ill effects, may ariſe from too ſtrait bandage; of which I was once a witneſs, in a ſimple fracture of the leg, where a dreadful mortification was occaſioned by it, and the patient's life and limb were ſaved with great difficulty. A caſe, more remarkable than this, fell under my care a few years ago, ſhewing unſkilfulneſs in another reſpect.

A wound miſmanaged.

A gentleman's ſon, about twelve years of age, diſcharging a ſmall braſs gun over-loaded, the breech-pin, about $\frac{3}{4}$ of an inch long, flew out, and penetrated the upper eye-lid, paſſing between the globe of the eye, and the orbit, down to the bottom. He was immediately carried to a pretender to ſurgery, who inadvertently ſtitched the wound, with this extraneous body in it, treating it, in other reſpects, very improperly; in conſequence of which,

(*a*) *Bontius* ſpeaks of a ſoldier, in whoſe caſe a Surgeon took an unuſual continuation of the *ſagittal ſuture*, through the middle of the *Os Frontis*, for a *fiſſure*; and though the patient was at length cured, under his inſpection and ſuperintendence, yet the ſteps that had been taken, in conſequence of the miſtake, occaſioned a ſeparation of that bone, at the *coronal ſuture*, and its coming away in two parts.

which, pain, inflammation, &c. enſued, and occaſioned my being called next day. After cutting the ſtitches, I diſcovered, by the probe, this foreign body, and when I had carefully enlarged the wound, extracted it, and by eaſy and gentle treatment, as our art directs, the wound was ſpeedily healed; but it was a conſiderable time before he regained uſeful ſight. The whole eye ſuſtained a violent ſhock, the pupil remained much dilated a long while, and though its figure is ſtill oblong, yet he can ſee to read. (*a*)

Hiſtories from Parè and others.

——*Paré* tells us he was ſent for to a ſoldier, that had a large penetrating wound of the *thorax* ſtitched, and that upon cutting the ſtitches, a great quantity of putrid blood flowed out, after removing ſome, that was concreted at the mouth of the wound; by which means he ſaved the patient.—— *Hildanus* mentions two caſes, where the patients ſuffered by corroſive applications. And the caſe of *Thrinon*, the ſon of *Damon*, related by *Hippocrates* in his Epidemics, who was ſeized with an *opiſthotonos*, and ſoon died, in conſequence of ſuch an application to a nervous part, is a very ſtriking and pertinent example to this purpoſe.——

Boerhaave

(*a*) I have lately ſeen this young Gentleman, and find the pupil has recovered its circularity.

Boerhaave gives a narration of a young gentleman's caſe, who received a wound in the radial artery, wherein the ſurgeon uſed a cauſtic application to reſtrain the *hæmorrhage* ; and which made ſuch ravage in the adjacent parts, that the median artery was eroded ; whence proceeded ſuch an effuſion of blood, as killed the patient. He alſo inſtances the caſe of a perſon, who had the artery that runs between the *tibia* and *fibula* divided, in which, attempts were made to ſtop the bleeding, by compreſſion and bandage, without effect, and the patient bled to death. In both theſe caſes, had the tourniquet been uſed, the wounds dilated, and the arteries tied, the patients might have been ſaved ; or perhaps, after a ſufficient dilatation of the wounds, to come at the mouths of the bleeding veſſels, proper ſtyptics, with ſtrong compreſſion, without circular bandage which wou'd obſtruct the refluent blood, might have had the deſired effect.—A Surgeon of my acquaintance, deſervedly in high reputation, told me he had been concerned for a man, who had the artery that runs between the *tibia* and *fibula* opened about the middle of the leg with the

point

point of a ſcythe; and that the limb was amputated, he not being able to reſtrain the great effuſion of blood. In this caſe, as every other attempt had failed, wou'd it not have been practicable and adviſable, after application of the tourniquet, to have diſſected the muſcles from the *fibula*, then to have paſſed under it ſome well adapted thin inſtrument to raiſe it up by, and keep it ſteady, ſawing a portion of it off with a fine ſaw, in order to have come at the bleeding veſſel? It appears to me this might have been done, without any very great difficulty, and with a ſtrong probability of ſucceſs.

Wounds may prove very unfavourable in bad habits.

4. WOUNDS may prove mortal in a bad conſtitution, that wou'd be eaſily cured in a good habit of body, or ſtate of health. They may be attended with fatal conſequences, in hydropic, cacochymic, ſcorbutic, venereal, or conſumptive caſes, where the *Vis Vitæ* is weak, and the fluids thin and acrid.

The

The method of making a Prognoſis in Wounds.

Method of drawing a prognoſtic in wounds.

AFTER having deliberately conſidered theſe ſpecifications in the *Diagnoſis*, we ſhall be little at a loſs in the *Prognoſis*. 1. We are to attend to the figure of the wound; a ſtrait wound is better than that which is curved or angular; becauſe the lips of it are more eaſily brought together, and kept in contact or proximity: and we need not ſay, that a ſuperficial one requires leſs time to cure, than that which is deep, or with loſs of ſubſtance; when deep, and ſo ſituated, that the matter has not a free depending exit, the cure proves difficult and troubleſome, for obvious reaſons, requiring a counter opening. 2. We muſt conſider the nature of the part wounded; and the nearer the wound is to vital parts, ſo much the more dangerous. When arteries, tendons, or nerves, are hurt, the *Prognoſis* is plain, from the anatomical knowledge of the wounded parts. Wounds of the joints are difficult to cure, and generally attended with worſe accidents than in other

other parts of the limbs, on account of their being ſurrounded with tendons and membranes. If a wound happens in any part, that is in conſtant motion, as the *thorax* and *abdomen*, in reſpiration, *that* may prove, in ſome degree, an obſtacle to its cure. 3. We muſt have regard to other accidents, and ſymptoms, that may attend wounds; as *hæmorrhages*, extraneous bodies lodged in them, coagula of blood, poiſon, ſplinters of bones, contuſion, pain, inflammation, fever, ſyncope, convulſions, palſies, apoplexies, &c. and according to theſe contingences, of which we ſhall particularly treat, the danger is to be eſtimated and determined.

Neceſſary conſiderations and matters of inquiry.

We are next to bring under conſideration, the patient's age and conſtitution, general ſtate of health, what diſeaſe he is affected with, or whether he is addicted to exceſs of any kind or not; for a healthy, temperate young perſon, whoſe blood is in a ſoft balſamic ſtate, is much eaſier cured than the old and infirm; or one whoſe conſtitution is injured by intemperance, or that is afflicted with ſome diſorder, which, independent of any other cauſe, might have brought

When the patient is not in a ſtate of ſanity ſmall and ſeemingly trifling wounds may end unhappily.

brought him to his grave, as we have before hinted : and wounds ſo circumſtanced, may fruſtrate the moſt judicious and rational methods of cure. Beſides, we are to have reſpect to the ſeaſon of the year ; for ſummer's ſcorching heats, and more eſpecially ſultry weather, with an humid air, are apt to bring on inflammation, fever, large ſuppurations, a greater degree of putreſcence and acrimony in the matter, and other bad conſequences, proceeding from corruption and depravity of the blood and humors.

HAVING well weighed all theſe circumſtances, nothing remains as to the *Prognoſis*, but to ſpeak to the event, or what inconvenience the patient will ſuffer, after the wound is healed ; which, may be deduced from the premiſes. The conſequence of dividing a principal artery in a limb will be a mortification ; the diviſion of a principal nerve will cauſe an inſenſibility, immobility, and atrophy of the limb ; the ſeparation of a tendon will be attended with the loſs of motion, which depends upon the action of the muſcle, to which it belongs ; a wound in the *medulla ſpinalis* will occaſion a palſy, or mortification, of the inferior parts ;

parts; an immoderate ſuppuration, in a very large, deep wound, by abſorption of the putrid matter, may end in a hectic fever and *maraſmus*; a great loſs of blood endangers a dropſy; for the ſolids, by that means, become ſo weak and inelaſtic, that they cannot duly elaborate the new *ingeſta*, or well perform, what the ancients called, the ſecond concoction, which is chylification, conſequently the chyle muſt be left crude, and ill prepared for ſanguification, and the various purpoſes of the animal œconomy.——If a wound penetrates the *thorax* and lungs, a *phthiſis pulmonalis* may enſue; and happening in any other conſiderable organ, an ulcer may remain, proving the fomes of a hectic and conſumptive diſorder.——It is unneceſſary to mention more particulars to this purpoſe; for after reflecting upon what has been ſaid, and being well acquainted with the ſtructure of the human frame, and the laws of the animal œconomy, any perſon may be a competent judge in theſe matters; but no one can without thoſe qualifications.

——*Anatomy*, *Phyſiology*, *Ætiology* and *Pathology*, being ſo evidently requiſite, to enable the Surgeon to make prognoſtics to

The neceſſary *præcognita*.

his credit, as well as to cure his patient, as has been already intimated, no farther exhortation to the attainment of them is neceſſary.

Of the intentions in the cure of wounds.

THE three following intentions are to be anſwered in curing wounds, and when any extraneous bodies are lodged in them, they muſt firſt be removed, as will be particularly directed, in the accidents attending wounds.

First intention.

THE firſt intention belongs to inciſed wounds, and is performed, by bringing their lips, as much as poſſible, into contact, or proximity, keeping them ſo, till they be united; which is called healing by *ſymphyſis*, or the firſt intention.

Second intention.

THE ſecond intention is accompliſhed, by promoting digeſtion, and regeneration of the loſs of ſubſtance; which is termed curing by *ſyſſarcoſis*, or by the ſecond intention.

THE

THE third intention is covering the wound, whether inciſed or otherwiſe, with ſkin, which is called *cicatrization*. Third intention.

Of *Symphyſis*.

AUTHORS generally begin to teach the cure of wounds by *Symphyſis*; but conſidering there is always ſome ſupply of new matter, the ſecond intention, called *Syſſarcoſis*, is neceſſary to be underſtood, before we can be well acquainted with the firſt, and have true and clear ideas of it. *Symphyſis*, according to its definition or etymology, is that branch of Surgery, as we have ſaid, which teaches us to bring parts ſeparated into contact, or approximation, and unite them; for which purpoſe, we muſt endeavour, as much as poſſible, to obtain an exact coaptation of them, after cleanſing the wound from blood, &c. with a ſpunge and warm wine and water, or ſome ſuch liquor, and then keep them in juxtapoſition, till the fibrils, &c. ſhooting out from each ſide of the wound, and interwoven as deſcribed in the appearances of a ſimple Symphyſis.

wound, become firm and of one ſubſtance; which we may obſerve is a kind of *Syſſarcoſis*, or incarnation. It is to be remembered, that this intention is practicable only in recent inciſed wounds; and when we have made a good and regular coaptation of their lips, we muſt endeavour to keep them as much in contact as we can, by bandage or ſuture, or both together; and we ſhall ſhew their ſubſervience, when we deſcribe them, and their uſes. This kind of wound, that the union of the parts may not be interrupted, is to be ſeldom dreſſed; and its dreſſing ſhou'd conſiſt of agglutinants, or ſuch kind of applications, as is leaſt apt to produce *pus*, avoiding all unctuous things. Though ſtitching of wounds with the needle is not ſo much practiſed as it was formerly, and what is called the dry ſuture, more frequently uſed, yet the needle and thread will be found abſolutely neceſſary, in ſome caſes, as we ſhall demonſtrate.

Syſſarcoſis.

Syſſarcoſis, or the ſecond intention in the cure of wounds, is the wonderful operation of nature, manifeſted in the elongation and diſtention of the *vaſa minima*, with the appoſition

appoſition of proper materials from the blood, for the formation of new veſſels, as has been deſcribed: and both ſolids and fluids muſt be in a good condition, or the *vaſcular compages* at the bottom of the wound, &c. called the incarnation, will prove either too compact, or looſe and luxuriant; therefore, though *Syſſarcſios* is, properly ſpeaking, the work of nature, we ſee it is the Surgeon's buſineſs, to aſſiſt her in it, that ſhe may not be obſtructed; and this aſſiſtance muſt be given, by endeavouring to preſerve the veſſels in a proper tone or elaſticity, to prepare and circulate the fluids, for the generation of the loſt ſubſtance; which is to be effected by ſuitable dreſſings, to prevent putrefaction in the wound itſelf; at the ſame time obſerving other rules, eſſentially neceſſary to be regarded, in dangerous wounds; as we ſhall ſhew in their reſpective places.

See page 71, &c.

After directing the management of the wound itſelf, we ſhall deſcribe the moſt convenient and uſeful bandages and ſutures, then treat of the accidents or ſymptoms appertaining to wounds, and among them, introduce the manner of extracting extra-

neous bodies, concluding this firſt part with the Non-naturals; all which appear of much conſequence to be well attended to.

The method of treating large wounds;

In order to cure large wounds, either with or without loſs of ſubſtance, we ſhou'd dreſs as expeditiouſly as we can; as the acceſs of the air is apt to contract the veſſels in their tender ſtate, and coagulate the fluids, obſtructing nature's operation. Hence it follows, that we ſhou'd remove the dreſſings no oftener, than is neceſſary to prevent the matter from becoming acrimonious, or its being abſorbed into the maſs of blood, where there is a large quantity of it made in deep wounds. This doctrine *Cæſar Magatus* and *Belloſte* have taken great pains to eſtabliſh; who, like moſt authors, fond of their own opinions, have carried the matter rather too far. *Celſus* adviſes opening the wound every third day; *Fabricius ab Aquapendente* every third or fourth day; but there are no rules preciſely to determine this point, which muſt be regulated by the judgment and experience of the Surgeon, from circumſtances and appearances. The general rule may be to dreſs, when the patient is ſenſible of a diſagreeable itching about

about the part; but the ſtandard for dreſſing is once in 24 hours, which is agreeable to the practice of the Hoſpitals. This rule will certainly hold good, in moſt caſes, and it is ſupported by the authority of the beſt and moſt experienced Practitioners of theſe days. It is true indeed, what *Fabricius ab Aquapendente*, who was one of the ableſt Surgeons of his time, juſtly obſerves, that the patient may think himſelf neglected, when ſeldom dreſt, obliging the Surgeon to dreſs him more frequently, though perhaps to his own prejudice; but this point muſt be left to the Surgeon's diſcretion. (*a*)

THE

(*a*) See two diſſertations, one by Monſ. *le Cat*, the other by an anonymous author, *en Rec. des pieces pour le priz de l'acad. roy. de chirurg.* tom. 1. *Sur les panſemens rares ou frequens.*——I believe none of the prize pieces of the royal academy of Surgery at *Paris* are yet tranſlated, which are excellent diſſertations upon various ſubjects; therefore it is to be wiſhed they were, for the ſake of thoſe who do not read *French*; or rather, it is to be wiſhed, that all ſtudents in Surgery wou'd make themſelves acquainted with the *French* tongue; for very often, it is a long while before a good book in that language upon this ſubject is tranſlated: and then the tranſlators, ſometimes not underſtanding the ſcience, though they do the language, their tranſlations prove faulty and defective, as may be obſerved in the tranſlation of Monſ. *Petit's* excellent work *des Maladies des Os*, and others.

Proper applications in wounds.

THE only applications, generally neceſſary at firſt, are fine, even, dry lint, with a pledget of ſoft tow, or linnen cloth, ſpread with the common Digeſtive, or *Ceratum album.* or *Unguentum ſimplex*; which dreſſing ſhou'd not be removed, till it can be very eaſily taken off; but the compreſs and bandage, proper to be applied, may be changed, ſhou'd the gleet prove large and offenſive. Upon the removal of the firſt dreſſing, digeſtives are to be uſed, as *Unguent. baſilic. flav. Unguent. e Gum. Elemi.* with the addition of *Balſam e Copaib.* or ſome other natural Balſam, or fine, pure *Turpentine*, occaſionally, which are the beſt of digeſtives. A variety of compoſitions, for this purpoſe, are to be met with in practical writers; the nature and conſiſtence of which muſt be altered, according to circumſtances, and the nature and diſpoſition of the wound. Theſe applications are to be made cold or warm, as the ſeaſon of the year and appearance of the wound ſhall direct, upon ſoft even pledgets of lint, which ſhou'd be ſo applied, that the extremities of the veſſels may be gently compreſſed; the wound muſt by no means be filled with

with hard doſſils, or have a tent forced into it; for by ſuch treatment the veſſels wou'd be ſo much compreſſed, as to hinder their ſtretching out, obſtructing nature in the work of regeneration: alſo dreſſing the wound in ſuch an irrational manner, with tents and hard doſſils, prevents a free diſcharge of the matter, irritates the ſenſible parts, and bruiſes the tender, new-made veſſels; whence often proceed obſtructions, inflammation, pain, fever, &c. We need only conſult *Cæſar Magatus*, *Wiſeman* and *Belloſte*, to be convinced of theſe facts, if our own experience and obſervation have not ſufficiently confirmed us in that belief, and ſhewn the abſurdity of a practice, now almoſt univerſally exploded; and which can never be beneficial, but upon very particular occaſions, which muſt be left to the Surgeon's diſcretion. (*a*)

Hard doſſils or tents not to be uſed.

It is proper, after application of the pledgets, to cover the part with a plaſter of

(*a*) See two diſſertations, one by Monſ. *Le Cat*, the other by an anonymous writer, in anſwer to the prize queſtion, propoſed by the royal academy of Surgery at *Paris*, for the year 1733. *Quels ſont, ſelon les differens cas, les avantages & les inconveniens de l'uſage des tentes & autres dilatans?*

of *Cerat. alb. Unguent. tripharm.* or common plaſter, which may be of uſe in keeping out the air, and in promoting the concoction of the matter, by preſerving native heat in the wound; then eaſy compreſs and bandage complete the dreſſings, which require to be adapted and applied ſo as not to excite pain, or obſtruct, in any degree, the circulation of the blood; for ſtrait bandage wou'd be as productive of evils, as tents and hard doſſils. After dreſſing, we are to conſider how to place the part or member, in the moſt eaſy and convenient ſituation or poſture; remembering that pain not only obſtructs the cure, but is in itſelf a dreadful evil, and to be avoided by all poſſible means, that can be thought of.

Strait bandage to be avoided by all means.

When we are about to renew the dreſſing, we ſhou'd take care to have all the *apparatus* ready, in neat and good order, before we remove the old; that we may not be obliged to expoſe the wound to the air, whilſt any thing neceſſary be preparing, that has through inadvertence been omitted. We are then to take off the dreſſings, as gently as poſſible, concealing, as much as we

Uſeful hints in dreſſing wounds, &c.

we can, every diſagreeable object from the patient's ſight; the matter is to be wiped off with ſoft cloth, tow or lint; for rough treatment not only cauſes pain, but breaks off the tender fibrils, or ſprouting extremities of the veſſels, hindering the incarnation of the wound. The beſt thing for this purpoſe is a piece of the fineſt ſpunge, expreſſed out of warm water, with a little wine or brandy added to it, which, by moderate preſſure upon a ſuperficial wound or ulcer, abſorbs the matter at once in the eaſieſt manner. We ſhou'd perform the dreſſing, in all reſpects, as expeditiouſly and neatly as poſſible, leaving the part in the poſition directed: and when there are ſeveral wounds, we ſhou'd never uncover them all at once, but always dreſs one, before we expoſe another. An attention to theſe circumſtances will have a farther good effect; it will prove the means of ingratiating the Surgeon into the patient's favour, whoſe care and tenderneſs will not paſs unregarded: and, by gaining his confidence and good opinion of us, his mind will be kept in more eaſe and tranquility; which is a matter of no ſmall conſideration, as we have obſerved in the introduction.

Of *ſanies* or *gleet*, &c.

THE bloody *ſerum*, called *ſanies* or gleet, which wounds diſcharge at firſt, is ſometimes immoderate, fetid, and of a blackiſh colour, and ſo acrimonious, as to erode the ſkin; the contuſed fibres often look like a ſlough, the ſwelled and obſtructed veſſels giving the appearance of filling up the wound with fleſh; but it may be diſtinguiſhed from good fleſh, this being firm and florid, the other ſoft and pale; and muſt be ſuppreſſed or removed, by ſome means, to lay the foundation for healing. The parts ſhou'd be defended againſt excoriation, with plaſters of ſome proper cerate, and the putrid, fetid ſcent corrected, by ſprinkling lavender-water and vinegar, or ſome ſuch fragrant antiprutreſcent liquor upon the bandage, &c. All theſe circumſtances demand ticular notice and conſideration, eſpecially with nice and delicate patients. (*a*)

HAVING

(*a*) In ſuch a putrid, gleeting ſtate of a wound, whether after any conſiderable operation or otherwiſe, nothing is ſo efficacious as the *Bark* with *Elix. Vitrioli*, when no circumſtances forbid the uſe of it.——In a looſe flabby ſtate of a wound or ulcer, I have ſeen great advantage from the uſe of a decoction prepared with *Cort. peruvian. & Fol. Iugland*, adding a little ſugar and *Tinct. Myrrhæ*, dreſſing them with lint moiſtened in it and applied moderately warm. Or this, *R Aq. Calcis* ℔ *ſs Tinct. Cort. peruv. ii Tinct. Myrrhæ ℥j m.* To which I have ſometimes added *Aq. vitriolic camphorat.*

Of the treatment of deep wounds where the matter collects, and cannot be eaſily diſcharged.

HAVING conſidered the management of a wound, to which we had eaſy acceſs, for the application of medicines, and from whence the matter was freely diſcharged, it is proper to give ſome directions concerning the treatment of a deep wound, with a ſmall external orifice, where there is danger of a collection of matter, that cannot readily be evacuated. In this caſe, it is neceſſary to make an enlargement of the opening by inciſion; and when the ſituation of the wound is ſuch, that the matter cannot have a free egreſs, a depending opening ſhou'd be obtained if poſſible; as for example, ſuppoſe a wound inflicted in the leg, deſcending a good way down, without the weapon's piercing outwardly below, we may firſt attempt, by expulſive compreſs and bandage, to preſs up the matter, in order to be diſcharged at the orifice, for which purpoſe a plaſter compreſs is the moſt proper, with a piece of thin ſheet-lead, ſuch as tea comes home in, put into the middle of it, as it will not be apt to ſlip from its fixed place, and will make due reſiſtence: but if the end cannot be effected by this method, and the lower part of the wound is near enough the

external

external teguments, it is adviſable to make an opening there, without delay; applying a compreſs above, and allowing the ſuperior orifice to cloſe. This depending opening is to be made, by introducing a probe, or other convenient inſtrument, cutting upon it with a knife or lancet; or by an inſtrument invented by *Monſ. Petit*, which anſwers the purpoſe better on ſome occaſions; it is deſcribed by *Heiſter* in his Syſtem of Surgery, Pl. 4. with his improvements upon it. After making an opening in this manner, in the moſt depending part, and ſufficiently dilating it, we ſometimes find it neceſſary to draw a ſeton through, from the ſuperior to the inferior orifice, continuing the uſe of it for ſome time, or to inject with a ſmall ivory ſyringe, or drop in, ſome kind of vulnerary abſterſive medicine, in order to bring the parts into a diſpoſition to admit of union by compreſſion, or to fill up with good fleſh.

See Balſam in page 144.

Of cicatrization

Cicatrization is the intention, as we have ſaid, that finiſhes the cure, about which we ſhou'd be particularly careful, eſpecially when the wound happens to be upon a part that is expoſed to view. The main point

to

to effect the purpoſe of leaving a fair and ſmooth cicatrix, in healing a wound with great loſs of ſubſtance, depends on the former part of the treatment, in filling the wound up with good, ſound fleſh, and that to an equal height, or very nearly level with the adjacent ſkin: when the incarnation is ſo far advanced, the wound may be cicatrized, with dry lint and moderate compreſſion, or with *Cerat epulotic.* ſuppreſſing any luxuriancy of fleſh occaſionally, with gentle touches of *Lap. Vitriol.* or *Cauſt. lunare*, till the cicatrization is completed. Of all wounds, burns require the moſt care to induce a ſeemly cicatrix.

Of veſications ſometimes appearing upon the cicatrix.

SOMETIMES the new-made ſkin will have veſications ariſe upon it, eſpecially where there has been a great loſs of ſubſtance, till that and the regenerated fleſh is perfectly organized, to admit of a free and uninterrupted courſe of the fluids through the vaſcular *compages*; which veſications are to be opened, as ſoon as they appear, to prevent eroſion by the matter contained in them, and then dreſſed after the common manner with *cerate* alone, or mixed with a little

little digeſtive, by which means they will ſoon be healed.

Of applications uſed to anſwer the different intentions in curing wounds.

Of digeſtives, deterſives, and incarnatives.

THE medicines called digeſtives, which have alſo a deterſive quality, and may, with propriety enough, have the appellation of incarnatives given them, are ſuch as we have already mentioned, as *Unguent. baſilic. flav. Unguent. e Gum. Elemi, &c.* When a ſoft balſam is thought neceſſary, either in deep, or other wounds, this may be uſed, of which I have long experienced the good effects.

An approved balſam, and very extenſively uſeful.

℞ Vini alb. generos.
Ol. Olivar. optim. a ℥iv
coq. ad conſumptionem dimidii dein add.
Unguent. e Gum. Elemi
Balſam. e Copaib. veri a. ℥j m.
& col. & in Phiala, lato ore, ſervetur.

THIS

This balſam is very convenient to be added occaſionally to the abovementioned digeſtives, when it is required to have them of a ſofter conſiſtence; and exceedingly well adapted to paſs into deep wounds, or to dip ſetons into, when uſed as directed after making counter openings. Sometimes I add a portion of *Tinct. Myrrhæ* to it, which by ſhaking incorporates well with it. *Unguent. baſilic. viride* is a good detergent. *Tinct. Myrrhæ & Aloës* is much commended by ſome. *Merc. præcip. rub. benè. lævigat.* is often uſed either alone, or in compoſition with the digeſtive, and generally obſerved to meliorate the Matter when thin and ſanious.——Deſiccative applications are of various kinds, as *Cerat. epulotic. Cerat. ſaturnin.* &c. concerning which, practical Writers may be conſulted.——Corroſives and Eſcharotics, uſed in deſtroying fungous fleſh, are *Alum.* and *Vitriol. uſt. Vitriol. roman. Cauſt. lunare. Lap. infernal.* &c. but by beginning early to dreſs with dry lint, there will not be much occaſion for theſe painful applications. By fixing *Lap. Vitriol.* or *Cauſt. lunare* into quills with ſealing

Deſiccative applications.

Corroſives and Eſcharotics.

wax, they may be uſed much more commodiouſly. (*a*)

Of Bandages and Sutures.

AFTER having attended to the different kinds of wounds, and the intentions in curing them, we ſhall now ſpecify the bandages and ſutures, as far as they are neceſſary and ſubſervient to thoſe purpoſes. The technical bandages of uſe in wounds, are the uniting, the retentive, and the expulſive; and

(*a*) See diſſertations concerning the different kinds of applications, uſed in the cure of wounds, *en recueil des piecés pour le prix de l'Acad. Roy. de Chirurg.*

The oppoſite cauſtics, ſo termed, and recommended by Doctor *Barry* in the Med. Eſſ. is a very powerful method, to deſtroy large fungi, performed by alternate touches of *Lap. infern. & Ol. Vitrioli*, as long as ſhall be found neceſſary. It was practiſed by *Wiſeman* for the ſame purpoſe, and I did the ſame, a great many years ago, upon his authority, and often ſince, with great advantage.——The *Eau mercurielle* of *Le Dran* is a very efficacious application, to anſwer the ſame end, which is a ſolution of *Merc. crud. p. i. in Aq. fort. p. ii.* I have frequently experienced the uſe of this alſo much to my ſatisfaction; ſo have many of my brethren upon my recommendation.——See ulcers with carious bones in my obſervations.

and that called the tailed-bandage, uſed in compound fractures, will be found very proper upon ſome occaſions in other wounds. (*a*)

The uniting bandage.

THE uniting bandage, uſed in rectilinear wounds, is made with a double headed roller of a fit length and breadth, according to the part it is to be applied upon, having a longitudinal ſlit cut in the middle, of three or four inches length. After dreſſing the wound as has been directed, compreſſes are to be applied on each ſide of it, in ſuch a manner, as to preſs from the very bottom to the lips or edges of the wound, before the application of the roller; which, by having one head paſs thro' the ſlit, will give an opportunity of drawing the lips of the wound together, as may be eaſily conceived. Sometimes it may be found neceſſary, to place pieces of ſtiff paper upon, or wrapt up in, the compreſſes, or to uſe plaſter-compreſſes, made as have been directed, that the bandage may act more equally and powerfully.——

(*a*) See the advantage of this bandage in ſimple as well as in compound fractures, in my Caſes and Remarks in Surgery.

When wounds are ſtitched, this bandage is alſo very uſeful, in order to ſupport the ſtitches, and prevent their breaking out, before the agglutination of the wound is accompliſhed. (*a*)

The retentive bandage; with a neceſſary caution in the application of it.

WHEN we make uſe of a ſingle-headed roller, as a retentive bandage only, we ſhou'd always remember, to begin the application of it on the ſide oppoſite to the wound; the reaſon is obvious enough, in order to prevent a farther ſeparation of the lips of the wound, as the contrary manner of applying it, tends directly to divide them.

The expulſive bandage.

THE expulſive bandage is performed with a ſingle-headed roller, making the preſſure gradually leſs, by ſmall and even edgings from the bottom of the Wound to its orifice; ſpending the reſt in ſuch a manner, as the Surgeon's diſcretion and judgment ſhall direct, to have the whole ſit eaſy upon the part, without interruption to the refluent blood. THE

(*a*) Mr. *Dent*, an ingenious Surgeon at *Dublin*, invented, a few years ago, an uniting bandage for the hair lip, in order to prevent uneaſy preſſure upon the pins, made by 30 or 40 threads paſſing between each other, the neceſſary ſpace in the middle of the fillet: and ſuch a kind of bandage, of a proportionate ſize, may have its uſe in other parts, to make the preſſure more even and equal upon the compreſſes.

THE double-headed roller, the triangular, and quadrangular bandages, ſo called from their figure, are thoſe frequently uſed in wounds of the head. The roller muſt be applied artfully ſo as to lie ſmooth and even upon the part, in neceſſary circulars and reflexers; it ſhould not be full four inches broad, have neither ſelvage nor hem, and be ſix or eight yards long, made of ſoft cloth. This is called by the Writers on this ſubject, the *Capeline* or reflex bandage.——The triangular bandage is made with a handkerchief, or ſquare cloth of a proper ſize, doubled into that figure, which makes a very uſeful bandage, for wounds of the forehead, and ſome other parts of the head.——The quadrangular, is made of ſoft cloth, about three feet ſquare, or a little longer than broad, which is an excellent bandage for the head. It is called by the *French*, *Le grand Couvre-Chef*; the application of it may be learnt from *Heiſter*, and other Writers upon this uſeful branch of Surgery; for it is beſide the preſent purpoſe to treat profeſſedly of bandages, which the moderns have wiſely endeavoured to reduce into a narrow compaſs, many of which, mention-

Of the double headed roller, the triangular and quadrangular bandages.

Capeline or reflex bandage.

The triangular bandage.

The quadrangular.

Le Grand Couvre-Chef of the French.

ed by the ancients, and thoſe of the laſt century, ſerving only to perplex our art; and ingenious men will exerciſe their invention upon extraordinary occaſions: But the application of bandages cannot well be learnt by verbal deſcription without *autopſy* and practice.

Of Sutures.

The different kind of ſutures.

THE ſecond manner of keeping the parts in contact, that were ſeparated, is by ſutures, The five kinds now in uſe are, 1. The dry ſuture. 2. The twiſted, uſed in the hair-lip and ſuch like wounds. 3. The interrupted. 4. The quilled. 5. The Spiral or the glover's. But ſtitching of wounds, as we have hinted, is not ſo generally practiſed, by the ableſt Surgeons, as it uſed to be, in the laſt and former ages.

Of dry ſutures

THE dry-ſuture is made by two pieces of ſticking plaſter, proportioned to the ſize of the wound, to which very narrow tapes are to be affixed, at due diſtances. After the hair is ſhaved off the part as cloſe as poſſible, the plaſters are to be applied at ſmall di-

ſtances,

ſtances from the lips of the wound, which are then to be brought gently and equably together, and covered with an even pledget of ſome vulnerary balſam, as before directed, retaining them in contact, or as nearly ſo as poſſible, by tying the tapes with great exactneſs, taking particular care to have them correſpond with each other on the oppoſite ſides; and they ſhould be tied with ſlipping knots, that they may be readily ſtraitened or looſened occaſionally. Inſtead of tying the tapes, they may be made to paſs thro' ſlits, like the uniting bandage, and then ſecured with very fine pins; or ſtrips of plaſter may be uſed, to anſwer the ſame purpoſe, which I have found ſucceed very well. There is another method of making the dry-ſuture, with only one piece of plaſter, having longitudinal holes cut in it, at a proper diſtance one from another, which give an opportunity of examining the ſtate of the wound, and applying dreſſings the better to it, as ſhall be found requiſite. It is made by faſtening the plaſter firſt well on one ſide of the wound, bringing the lips of it gently together, as already directed, and then applying, and fixing it carefully to the other,

dreſſing

dreſſing the wound over the openings of the plaſter. This kind of ſuture is of uſe in any part, but more particularly in wounds of the face, to prevent deformation, from the needle and ligature.

After theſe ſutures, it is adviſable to apply eaſy compreſſes and the uniting bandage, when they can be conveniently adapted to the part, in order to aſſiſt and ſupport the plaſters, in keeping the lips of the wound in appoſition; and it will be neceſſary, to attend diligently to the ſtate of the wound, from time to time, and ſtraiten or ſlacken the ſuture and bandage, renewing or continuing the old dreſſing, according to appearances of the wound and adjacent parts, till the union of it is perfected, which will ſometimes be in a few days. The time generally allowed for the union of wounds, of any conſiderable ſize, is ten or twelve days; but more ſuperficial ones often unite in three or four. When we have reaſon to believe the union is completed, the plaſters are to be carefully removed; though commonly the moiſture, proceeding from the wound, inſinuates itſelf between them and the ſkin, making them eaſy to be taken

taken off, and a renewal of them neceſſary ſometimes, before the union of the wound is effected; under which circumſtance, great care is required to have the parts kept together, by a proper aſſiſtant, whilſt we are taking off the old uſeleſs plaſters, and applying the new.

A method that may be found uſeful in wounds of large dimenſions.

I HAVE uſed the following method in ſome large inciſed wounds, with a good effect, in preventing the receſſion of their lips. Inſtead of the ſingle pieces of plaſter, adapted to the parts, as in the dry ſuture, I have put 5 or 6 ſuch pieces of plaſter together, with a piece of thin ſheet lead in the middle, as deſcribed before, in making plaſter-compreſſes; and after fixing them exactly, as directed, near the lips of the wound, carried a ſufficient number of narrow ſtrips of the ſame plaſter over them, paſſing them through ſlits, like the uniting bandage, returning the ends over theſe compreſſes; and by their adheſion all together, they will prove a powerful means of anſwering the deſign. I have found by experience, that half the quantity of roſin, directed in the Diſpenſatory to be added to the *Emplaſt. commun.* makes it adheſive enough for

for theſe purpoſes, or even without the addition of any roſin, if the plaſter is well made.

The twiſted ſuture.

THE twiſted-ſuture, uſed in the hair-lip, and in the total diviſion of pendulous parts, as the ear, the noſe, &c. is performed by introducing one, two or more, needles or pins through the whole ſubſtance of the lips of the wound, twiſting a waxed thread neatly about them, in the form of a figure of 8. The needles or pins are to be choſen longer or ſhorter, as the circumſtances of the wound direct; in order to introduce them, the lips of the wound are to be held firmly, with the finger and thumb, which is a better method in general, than to uſe the ſtitching quill, as directed by ſome Surgeons; care muſt be particularly taken, to enter the needles or pins at a ſufficient diſtance from the edge of the wound, making them paſs quite through, and out at the ſame diſtance on the oppoſite ſide, that they may not be apt to cut their way out, before the wound is well conſolidated. When they are thus introduced, we are to wind a ligature, as has been deſcribed, in the croſs manner that taylors fix a needle and thread upon their ſleeves;

ſleeves; or we may make one ligature ſerve for all. After this, we are to take off the points of the needles or pins with inciſive pincers,* fixing little compreſſes, made with ſnips of common plaſter, under the ends of them on each ſide, applying to the wound a pledget armed with ſome vulnerary balſam, not apt to produce matter, but of the moſt agglutinating nature, and a common plaſter over it, with eaſy compreſſes and the uniting bandage, where they can commodiouſly be uſed, for the ſame reaſons, as given in the application of the dry ſuture. The wound is to be dreſſed in this manner, at ſuch diſtances of time, as ſhall be found neceſſary, but it does not require daily dreſſing, which poſſibly might interrupt the union of it; when that is effected, the needles or pins are to be cautiouſly withdrawn, ſtill continuing ſome proper application, till the holes made by them be filled up.

THE

* Silver-pins may be had of the inſtrument-makers, with ſteel points, ſcrewing in and taking out eaſily, by which this inconvenience may be obviated.

The interrupted future.

THE interrupted future comes more generally into practice than the other. It is performed with a needle of a proper size, as the nature of the wound directs, threaded with a flat waxed ligature, by thrusting it through both lips of the wound, with or without the help of a stitching quill; bringing them together, in the manner directed in the dry future, and keeping them so, by tying the ligatures with slipping knots, that they may also be occasionally loosened or straitened; making a number of stitches, according to the length of the wound, at the distance of near an inch from each other. In superficial wounds, needles of the least curvature are propereſt; in deep wounds they must be curved in proportion. In such a case, the needle must be thrust down to the bottom of the wound, and if it is a very deep one, from without inwards, taking out the needle, and from within outwards; observing that the punctures correspond, and be made at due distances from the edges of the wound, that the ligature may not cut through too soon; but if it is not a deep wound, both lips may be pierced at one thrust, without taking out the needle.

When

When the wound is deep, the tegument thick and tough, and the operator's fingers bloody, he may find it difficult to puſh the needle through; then *Petit's Port d'Aiguille*, deſcribed by *Garengeot en Traité des inſtrumens de chirurgie* may be uſeful; but in general the fingers will fully anſwer the purpoſe, without that aſſiſtance. When there is a neceſſity of making more ſtitches than one, we ſhou'd begin next to one end, rather than in the middle of the wound, always remembering to make the Surgeon's knot or nooſe, that the ligatures may be eaſily looſened, in caſe pain or inflammation ſhou'd make it neceſſary. The wound itſelf is to be treated, as has been already directed, making ſuch other applications, as may moſt effectually prevent pain, inflammation, &c. not forgetting to apply a very eaſy compreſs and gentle bandage; here alſo, compreſſes on each ſide the wound, and the uniting bandage, may prove very uſeful and ſubſervient to the ſtitching. We ſhou'd not ſuffer the ſtitches to remain longer than is neceſſary in the wound, becauſe the ligatures, cutting the fleſh and ſkin, may leave pretty large holes, ſometimes proving

proving troubleſome to cure, beſides adding to the deformity of the ſcar, which ſhou'd be avoided, as much as we can, for the patient's ſatisfaction, and our own credit.

The quilled future.

THE quilled-future is ſeldom made uſe of, but in the *Gaſtroraphy*, for large extenſive wounds in the *abdomen*, though it may, without impropriety, be uſed in ſuch wounds, in other parts of the body, when we have reaſon to fear the ligatures, in the interrupted future, ſhou'd cut quite thro' too ſoon, by the ſtrong receſſion of their lips; but as we ſhall be obliged to mention it in wounds of the *abdomen*, we ſhall defer the deſcription of it till then.

The glover's, or continued future.

THE glover's, ſpiral, or continued future, is now only uſed in wounds of the inteſtines or ſtomach, the deſcription of which therefore, in courſe comes under the ſame article as the laſt.

Circumſtances forbidding the uſe of futures

SUTURES are to be uſed only in clean, recent wounds, as we have obſerved in *Symphyſis*, where no large blood-veſſel is cut;

cut; for confinement of blood in the wound might produce bad ſymptoms, as inflammation, &c. and to practiſe them in old wounds wou'd be attended with as bad conſequences, by detaining the matter that ſhou'd be evacuated, and ſo retard the healing. Sutures are improper in contuſed wounds; for the contuſed parts in a wound muſt ſeparate and be digeſted off, before nature can perform her part in the cure; the ſame reaſon holds good, when the wound is internally cruſted over: and when there is a great loſs of ſubſtance, ſtitching wou'd be evidently wrong, as, by it, the parts wou'd be put too much upon the ſtretch, cauſing great pain in bringing the lips of the wound together; and cou'd they be ſo united, the cicatrix probably wou'd appear ſo puckered and deformed, as to bring a reproach upon the Surgeon. We are not to attempt ſtitching a wound, where there is manifeſt hazard of puncturing a large veſſel; we are alſo to reject this practice, if there is an inflammation, or tenſion of the parts, for under ſuch circumſtances, it wou'd certainly increaſe the ſymptoms, and might prove fatal in a

bad habit of body. If there is reaſon to apprehend an extraneous body lies latent, no caution againſt ſtitching is wanting. To ſtitch a poiſoned wound wou'd be deſtructive practice. And ſutures are not adviſable, except under particular circumſtances, upon parts that are in continual motion, as the *thorax* and *abdomen*; for by the involuntary motion of reſpiration, the ſtitches might not only ſoon be rendered uſeleſs, or break out, but the wound be made worſe, than it wou'd have been without ſtitching: however the dry-ſuture, or ſtrips of adheſive plaſter, to keep the lips of the wound from receding, are proper, and may prove very beneficial on that account. (*a*)

FROM what has been ſaid, we ſee what wounds are curable by *Symphyſis*, and what by *Syſſarcoſis*, and how far bandages and ſutures are neceſſary aids in the cure of wounds. Now we ſhall conſider and direct, more particularly, the treatment of wounds of different

(*a*) In *Heiſter's* ſyſtem of Surgery, we find plates, that clearly deſcribe the various kinds of ſutures, as well as bandages.

different parts of the body; as of the arteries, veins, lymphatics, nerves and tendons, reſerving thoſe of the membranes and ligaments, till we come to wounds of the joints, towards the concluſion.

The nature and conſtruction of an artery.

An artery is an extenſible, elaſtic tube, conſiſting of three coats, made up of fibres in different directions; the external is connected to the ſurrounding parts by cellular membrane, and conſiſts of fibres, running in every direction; the fibres of the ſecond are longitudinal, and thoſe of the internal are circular. By this conſtruction, it is capable of dilatation and contraction, lengthening and ſhortening, to anſwer many purpoſes.

Of the treatment of a wound in a ſmall artery.

We ſhall begin with the cure of a wound in a ſmall artery. When it is totally divided, in any external part of the body, it retracts into the neighbouring parts, as we have obſerved before, the *hæmorrhage* generally ſtopping of itſelf, and differs not from a ſimple wound, as we have deſcribed; but when ſuch a veſſel happens to be punctured, or only partially divided, according to our ſecond ſuppoſition, the enſuing *hæmorrhage*

may prove of long duration; in which caſe, if it can eaſily be come at, without injuring any conſiderable part, it is to be totally divided, which reduces it to the ſtate of a ſimple wound; or the wound muſt be ſufficiently enlarged, by a longitudinal inciſion, to make room for applications, and then dry lint or *puff-ball*, lint moiſtened in a *vitriolic* ſolution, or the white of an egg, dipping it into flour, or ſome ſuch application, carefully applied, with compreſs and bandage, will generally anſwer the purpoſe effectually: or the needle and ligature may now be uſed. After the *hæmorrhage* is reſtrained, the wound is to be treated in the common manner.

Of the treatment of a wound in a large artery.

When a conſiderable branch of the *femoral*, or *brachial* artery, in the leg or cubit, is wounded, the effuſion of blood, unleſs ſpeedily reſtrained, may bring the patient's life into danger; on which occaſion, various methods are propoſed and practiſed, as by compreſſion, ſtyptics, eſcharotics, the actual cautery, and the needle and ligature, which is preferable to the other, from its greater ſecurity,

when

when it can conveniently be uſed. (*a*)

Of ſtopping *hæmorrhages* by compreſſion.

WHEN we wou'd rely upon compreſſion, after the application of a ſufficient quantity of lint, or other ſoft ſubſtance, with or without a *ſtyptic*, to the mouth of the veſſel, the beſt and moſt effectual compreſs is made with pieces of plaſter, interpoſing a piece of card, ſtiff paper, or thin ſheet lead, giving it ſuch figure and dimenſions, as we find beſt adapted to the purpoſe, in order to have the bearing made, by the bandage, directly perpendicular upon the wounded veſſel; endeavouring to leave the adjacent parts, as free as poſſible

(*a*) *Paré* was the firſt who uſed the needle and ligature in amputations; but he was not acquainted with the curved needle; therefore was forced to paſs his needle from the veſſel to the edge of the ſtump, including ſome of the ſkin in the ligature. His practice was oppoſed with all the acrimony, that prejudice cou'd ſuggeſt, particularly by *Gourmelin*, a Doctor of the Faculty at *Paris*, where Phyſicians and Surgeons have been at variance many centuries, which diſcord made *Lanfranc*, an eminent practitioner there, both in phyſic and ſurgery, who had been educated at the famous *Salernian* ſchool, expreſs himſelf in this exclamatory manner. "*O Deus! quare ſit hodie tanta differentia inter Phyſicum & Chirurgum!*——See *Hiſtoire de l'Origine & des Progres de la Chirurgie en France*, which was publiſhed upon the eſtabliſhment of the royal Acad. of Surgery at *Paris*.

from circular preſſure, which tends to increaſe the *hæmorrhage*, and produce other bad ſymptoms; but in order to obviate thoſe inconveniences, thick compreſſes of cloth, with ſtiff paper on the outſide, may be applied over the part, and to the oppoſite ſide of the limb, which will leave room for the circulation of the blood through it, without any prejudicial interruption, though a proper degree of preſſure be made with the roller; which ſhou'd be double-headed, paſſing through a ſlit upon the ſuperior compreſs, as directed in the uniting bandage, by which means the force may be increaſed more commodiouſly, without hazard of its ſlipping.——The bandage, &c. muſt be varied, according to the different parts, and circumſtances attending the *hæmorrhage*, in which reſpects, the Surgeon muſt exerciſe his genius and invention: or a machine may be conſtructed, in caſe of emergency, upon the principles of that in my obſervations, or like that in *Heiſter*, &c. when we happen to be in a place, where we can meet with a proper workman.—— We find compreſſion alone infallibly anſwers the end, when there is a bone to counteract

it,

it, immediately under the wounded veſſel, as daily experience ſhews, in opening the *temporal* artery, where dry lint and a plaſter compreſs, having a piece of card or ſtiff paper in it, with the well adapted *nodoſe* bandage, is all that is neceſſary, to reſtrain the bleeding after this operation. This bandage is made with a fillet or roller about 4 yards long, and near an inch and an half broad, with two heads, which are to be reverſed two or three times, forming knots in order upon the compreſs. This kind of bandage may have its uſe ſometimes in other parts, as I have frequently experienced, as well as upon this occaſion.

Of Styptics.

THERE have been a great many *ſtyptics* publiſhed, and boaſted of as infallible, which, upon trial, have not anſwered the encomiums given them, but much diſappointed the Surgeon's hopes and expectations; and indeed it is running too much riſk, to rely abſolutely upon them in wounds of the large arteries.——As to the uſe of fungous ſubſtances, which is a very ancient practice in *hæmorrhages*, I think, ſomething very conſiderable may be reaſonably expec-

Of the uſefulneſs of fungous ſubſtances in ſuppreſſing *hæmorrhages*.

ted from them, when exactly applied to the mouth of the bleeding veſſel, with powerful compreſſion, without which, the Surgeon's expectations will, in all probability, be fruſtrated. That kind, which I have often uſed, and prefer to all the reſt, is the *Crepitus Lupi*, called alſo *Lycoperdon*, *Puff-Ball*, *Mullipuff*, or *Boviſt*, by the botanic writers. This plant grows frequently in paſture-grounds, to the ſize of a pompion, which it reſembles in form; till its full growth, it is white, like a muſhroom, and of ſuch texture, then gradually grows brown, becoming a very ſoft ſubſtance in autumn, which is the time of gathering it for chirurgical uſe, ſooner or later according to the ſeaſon.

The beſt kind for this purpoſe is that known by the name of *Puff-Ball* in this Country.

As I have found this fungous ſubſtance a very uſeful application, on many occaſions, I am not willing to ſuppreſs, what I know of its efficacy, from my own experience, which I ſhall relate, after giving a ſhort account of the opinion of others concerning it. *Felix Wurtz* commends it.—— *Schroder* calls it *Fungus Chirurgorum*.—— *Cluſius* ſays it is very efficacious in ſtopping

The opinion of eminent authors concerning its efficacy.

effuſions

effuſions of blood.——*Bauhine* ſays the ſame.——*Heiſter* ſpeaks of it, as a thing much in uſe for this purpoſe.——*Ray*, in his *Synopſis method. Stirp. britan.* after deſcribing the plant, ſays. "*Hæc ſubſtantia* "*vulneribus, ubi ſiccata fuit, imponi ſolet, pro* "*ſanguinis fluxu cohibendo.*" And I think, *Boerhaave* recommends it on this occaſion.

It is a ſofter and more abſorbent application than lint.

It is a ſofter application, and more abſorbent than lint, which conſiderations have induced me, to uſe it often after amputations, inſtead of lint, applying it in ſmooth, even ſlices; and after extirpating ſeveral breaſts, and large tumors, where the veſſels have not been large, I have uſed it, with moderate preſſure, without finding any neceſſity for the needle and ligature. I have alſo found it of ſingular ſervice in *bleeding cancers*, by its conſtantly ſtopping the effuſion of blood, with gentle compreſſion, exciting no pain, which is to be looked upon as a happy circumſtance, in ſuch deplorable caſes.——Perhaps ſlices of this, applied to ſtumps, might anſwer the end propoſed by Mr. *Kirkland*, in the 2d vol. of the *London medical Obſervations and Inquiries*, of abſorbing

Of ſingular ſervice in *bleeding cancers*.

ſorbing the matter, inſtead of ſpunge, recommended by him, in order to prevent a reflux of it.——This ſubſtance may be made more compact, by putting it into a preſs; and ſo prepared, ſeems fitter for ſome purpoſes; as for inſtance, ſuppoſe a veſſel, opened in a part where it cannot be come at with the needle, and wou'd be dangerous to apply an *eſcharotic*, a piece of ſuitable dimenſions might be conveyed down to the bleeding veſſel, filling the part up, ſo as to have ſtrong compreſſion made upon it, as we have directed, by hand or otherwiſe; but the caſe may be ſo circumſtanced, as we have hinted before, as to make the fingers the beſt, and indeed the only, compreſſive inſtruments, that can be admitted. As this ſubſtance, thus prepared, imbibes moiſture, it will expand, and act more ſtrongly upon the mouth of the veſſel, if the compreſſion is properly regulated; and the diſtention of the ſurrounding veſſels, will, in ſome meaſure, promote this effect. This is the manner, that I apprehend fungous ſubſtances act in reſtraining *hæmorrhages*.

Manner of making it more compact to render it more uſeful upon ſome occaſions.

Eſcharotics

Eſcharotics are more powerful than ſtyptics or aſtringents; for they deſtroy the life of the parts, to which they are applied, inducing an *eſchar* or cruſt on the mouths of the bleeding veſſels; but *ſtyptics* or aſtringents, according to the general meaning or acceptation of the words, ſignify no more than an exertion of their power by coagulating the blood, or leſſening the diameter of the veſſels, by putting their *fibres* upon contraction. The corroſive applications, uſed on theſe occaſions, cauſe exquiſite pain, ſometimes throwing the patient into convulſions, when near nervous parts, eſpecially if they have *arſenic* in their compoſition, which ſome authors of no ſmall note have recommended; and among the reſt, that great and deſervedly eſteemed Practitioner Serjeant *Wiſeman* has run into this error. The leaſt dangerous of the claſs of *Eſcharotics*, uſed in ſtopping *hæmorrhages*, is the *Vitriolum romanum*, the ſingular good effect of which, Mr. *Layman* and I experienced, with the compreſſive machine, as related in my obſervations: But all theſe applications are attended with great inconveniences, beſides the pain, &c. which they

Of Eſcharotics; great care and caution requiſite in their uſe.

The danger and ill conſequences of eſcharotic applications.

they excite, as a return of the bleeding, when the *eſchar* falls of, or deſtroying the adjacent parts; by which another artery, if it lies near, may be opened; and this unhappy effect was verified in the caſe, that *Boerhaave* uſed to mention to his Pupils, of a young man at *Leyden*, who loſt his life, by ſuch an incautious ſtep.——Some years ago, I was called to an elderly woman, a fortnight after having had the *radial* artery divided, a little above the wriſt, with a ſharp-pointed knife, by the flapping of the wing of a turkey, as ſhe was killing it. A Surgeon, of but little experience, immediately plugged up the wound with ſome *ſtyptic*, and ſo, from time to time, ſtopped the bleeding, by various applications; but the frequent returns of it exhauſted the patient's ſtrength, bringing her life into imminent danger. The painful applications cauſed great tumefaction, and inflammation of the whole limb, in which ſtate I found her; and there appeared to me no other expedient left, but to apply the *tourniquet*, and diſſect the parts, between the tendons, as far as neceſſary, to diſcover the bleeding veſſel, which I did with

History of a caſe wherein ſtyptics, &c. were ineffectually uſed.

with ſome difficulty, the ends of the artery being conſiderably ſeparated; but by the knife, with the aſſiſtance of the diſſecting *forceps* and hook, I raiſed them ſufficiently to convey ligatures about them, without injuring any of the neighbouring parts; which effectually ſtopped the effuſion of blood: and the wound was healed by the common treatment, preſerving the perfect uſe of the limb.

Of the uſe of the *Actual Cautery.*

In conſideration of ſuch danger and inconvenience, attending the uſe of *eſcharotic* applications, ſome of the ableſt Surgeons have preferred the *actual cautery*, as the pain it creates is not of ſo long duration, and its effect more certainly limited, as well as quicker, when exactly directed to the mouth of the bleeding veſſel, with the aſſiſtance of the *tourniquet*: and a *canula*, upon ſome occaſions, will be found neceſſary to defend the neighbouring parts, and convey the *cautery* to the deſtined place more preciſely. By touching the part artfully with the *cautery*, of a proper degree of heat, an *eſchar* may ſoon be formed, to reſiſt the force of the blood; gentle touches

at

at firſt, quickly repeated, will be found to anſwer the end beſt; forming the *eſchar* gradually, is the moſt likely manner to make it ſufficiently firm; for ſhou'd the *cautery* be kept on too long, upon its firſt application, it may bring fleſh away with it, and fruſtrate our deſign. This I ſpeak from experience.——A young Gentleman, fighting a duel, received a thruſt with a ſword between the *Radius* and *Ulna*, whence proceeded a profuſe *hæmorrhage*, proving beyond doubt, that the *median* artery was opened. After the application of a *ſtyptic*, ſtrait circular bandage was applied, upon which, the bleeding increaſed, but abated upon removal of the bandage: however, the *actual cautery* was uſed, and effectually ſtopped the effuſion of blood. In this caſe, we have a convincing proof of the ill effect of ſtrait circular bandage, which, acting upon the *radial* and *ulnar* arteries, threw more blood, and with force in proportion, into the *median* in its progreſſion, obſtructing at the ſame time the reflux of the blood by the veins; which cauſes conſpired to increaſe the *hæmorrhage*.

A caſe ſhewing the good effect of the *Actual Cautery*, and ill effect of ſtrait circular bandage at the ſame time.

The method by the *Actual Cautery*, liable to the ſame inconvenience of a conſequent bleeding as *Eſcharotics*.

THE method of reſtraining *hæmorrhages* by the *actual cautery* is liable to the ſame objection, in reſpect to the hazard of future bleedings, upon the fall of the *eſchar*, as that by an *eſcharotic*; of which the Surgeons in former ages, before the uſe of the needle and ligature, were but too well convinced, by the loſs of their patients; therefore ſhou'd it be thought adviſable, to put ſuch methods in practice, upon any emergency, in theſe days, the bandage and compreſſes, applied as before directed, ſhou'd not be removed in leſs time than three or four days, or more, unleſs for particular reaſons, to look at the wound, which muſt then be treated with the utmoſt care and gentleneſs, preſerving a due degree of preſſure upon the veſſel at the ſame time, leſt we ſhou'd diſturb the application, that had been made to it, before it is ready to fall off; over which, for greater ſafety, it will ſtill be right to apply *Puff-Ball*, prepared as directed, or ſome ſuch ſubſtance, and moiſtened in ardent ſpirits, to retard the fall of the *eſchar* as long as poſſible, and reſiſt the impetus of the blood with moderate preſſure; and it ſhou'd be continued

nued after the *eſchar* is fallen off, for ſome time, till we have good reaſon to believe the veſſel is united, and firmly ſealed up with fleſh. The ſame application immediately made to the *eſchar* produced by the *actual cautery*, aſſiſted by the compreſſes and bandage recommended, I am well aſſured, will prove a good means of ſecurity, againſt a conſequent *hæmorrhage*. We may remember, that the *actual cautery* is the only reſource in *hæmorrhages*, in ſome parts, particularly in the mouth, as we have hinted before: and we muſt not forget, when we are called to a patient, on account of a profuſe *hæmorrhage* upon a limb, to apply the *tourniquet* directly to reſtrain it, till a proper *apparatus* can be prepared. The *tourniquet* will be found abſolutely neceſſary, to give an opportunity of making any kind of applications, with exactneſs, to the bleeding veſſel, after well wiping away the blood with a ſpunge; and it ſhou'd be kept on a little while after, letting

Mr. *Crane*, one of the Surgeons of St. *Bartholomew's* Hoſpital, invented, a few years ago, an excellent *tourniquet*, ſuperior to any I have ſeen, which ſhou'd, by all means, be had in plenty in the army and navy.

ting it looſe gradually, increaſing the compreſſion with the hand, at the ſame time, over the bandage and compreſs, for reaſons too obvious to want explanation.

The needle and ligature preferable to other methods in ſtopping *hæmorrhages.*

As the preceding methods are dangerous and precarious, the beſt Surgeons now chuſe the needle and ligature, where practicable, even though there ſhou'd be a neceſſity of enlarging the wound, in order to come at the veſſel; which method is more ſafe and certain in its effect, care being taken to avoid injuring any conſiderable parts. This operation is performed with a needle of a proper curve and ſize, threaded with a flat ligature waxed, made of ſhoemaker's thread, which is the beſt material, when fine and even, to make ligatures of. The needle is to be introduced a little above and below the diviſion or orifice of the veſſel, and the ligature to be cut in the middle, after drawing it equally in; or ligatures may be paſſed in ſeparately. The opening of the veſſel will be eaſily diſcovered by looſening the *tourniquet-ligature*, when that can be uſed; and we muſt endeavour to avoid pricking or including

nerves

nerves or tendons, which may be effected, when not interrupted with blood, by raiſing the veſſel a little, where it can be fairly brought in view, with the point of the knife and diſſecting *forceps*, in an artful hand. (*a*) This wound is to be conſidered, as a recent *aneuryſm*, and it is of the utmoſt conſequence, to make two ligatures upon the artery; for the bleeding may readily continue from the lower part of the canal, by means of the communicant branches; as we may eaſily conceive, when we conſider, that the ſtructure of the arterial ſyſtem is without valves. (*b*) There are two inſtances in the *Philoſ. Tranſ.* from Mr. *Cowper*, a great Anatomiſt and Surgeon in

(*a*) A hafted-needle may prove a very uſeful inſtrument in this operation ſometimes, having the eye near the point.

(*b*) See Mr. *Lambert's* method of ſtitching the artery in an *aneuryſm*, in the ſecond vol. of the *London medical Obſervations and Inquiries*.——It is to be practiſed only in recent caſes: and it may alſo be conſidered, how far two or three ſtitches of the ſpiral ſuture, made with a very fine flat needle properly curved, may anſwer the like purpoſe.——The *Port d'Aiguille* may be found a neceſſary inſtrument in Mr. *Lambert's* method, and in making this ſuture, for very obvious reaſons.

in his time, to enforce this attention.(*a*) After thus ſecuring the wounded artery againſt future bleeding, the wound itſelf is to be treated in the common manner, with digeſtive, &c. applying gentle compreſs and

N bandage,

(*a*) The violent charge againſt ligatures in amputations, I am perſuaded, is not well founded, from the uninterrupted ſucceſs I have had in a great number of inſtances, ſince I practiſed the method, recommended in my obſervations, with no other bandage, than ſtrips of common plaſter, and a knitted woollen cap; whence I cannot help concluding, that the alarming ſymptoms, which have been aſcribed to the ligatures, principally aroſe from ſtrait circular bandage. My friend Doctor *Donald Monro*, to whom I am under very great obligations, has told me, that the Surgeons of the Royal Infirmary at *Edinburgh* were aſtoniſhed at the ſucceſs, attending amputations there, when they laid aſide ſtrait bandage, by his father's advice, whoſe authority cannot have too great weight in a matter of ſuch concernment, as tends directly to obviate pain and preſerve life: and the medical art is infinitely indebted to that gentleman.

Since I wrote theſe papers, I have obſerved, Monſ. *Pouteau*, ſenior Surgeon of the *Hôtel-Dieu* at *Lyons*, in his *Melanges de Chirurgie* printed in 1760, and Mr. *Kirkland*, an eminent Surgeon in this Kingdom, in his treatiſe upon ſuppreſſing *hæmorrhages* from divided arteries, publiſhed in 1763, differ in their ſentiments from Monſ. *Petit*, whoſe *hypotheſis* is, that *hæmorrhages* are ſtopped after amputations by *coagula* of blood, formed ſeveral inches up the arteries, as appears in the *Mem. de l'Acad. roy. des ſciences.* I have the ſatisfaction to find the experiments, made by thoſe two Gentlemen, fully ſupport my opinion, upon this ſubject, which I wiſhed to have had an opportunity of making myſelf, when I publiſhed it among ſome caſes and remarks in Surgery, in the year 1758.

bandage, making it only retentive, and ſuffering the ligatures to become quite looſe, before the removal of them.

Neceſſary rules to be obſerved in *hæmorrhages*.

By whatever means the effuſion of blood, proceeding from a wounded artery, is ſtopped, if the patient is of a plethoric, ſanguine habit, with a ſtrong pulſe, veneſection is above all things neceſſary, in order to leſſen the quantity, and weaken the impulſe of the blood, repeating it occaſionally. (*a*) Upon the ſame principles, we ſhou'd preſcribe a cooling, ſpare, diet, and laxatives, that ſtimulate in the leaſt degree, adviſing the patient, by all means, to keep himſelf quiet, and his mind free from perturbation.——The ancients laid great ſtreſs upon revulſion and derivation, even in wounds of the arteries externally, as we may obſerve in *Fabricius ab Aquapendente*, *&c.* but they are of much more conſequence in *hæmorrhages*, from wounds of the internal veſſels, as we ſhall ſhew hereafter; when bleeding and every other means, that reaſon can ſuggeſt, ſhou'd be employed to diminiſh

(*a*) See *Hales's Hæmaſtatics.*

diminiſh the quantity of blood, and weaken its impelling force. Reſt of the body ſhou'd be very ſtrictly enjoined, and the utmoſt endeavours uſed to keep the patient's mind eaſy, allowing no more food than barely to ſupport life. What he eats ſhou'd be of a cooling, incraſſating, and agglutinating nature, and his drink ſhou'd be of the ſubaſtringent kind, as *Tinct. Roſar.* red wine and water moderately acidulated with *Spirit. Vitriol. &c.* to be taken cold; not forgetting the prudent uſe of opiates, occaſionally, to procure reſt, and keeping the bowels open, by the gentleſt means. In ſuch caſes, the *Bark, Alum & Nitre,* from their well known properties, may alſo be adminiſtred with good advantage, according to the Surgeon's diſcretion, when a regular Phyſician cannot be conſulted.

It may not be here unſeaſonable, to introduce the treatment of *aneuryſms.*

Of the treatment of *Aneuryſms.*

In the treatment of wounds of the arteries, it has been obſerved, that when the trunk of an artery in a limb was wounded,

loſs of ſenſation, motion and nutrition proved the conſequence of ſuch an accident, which conſideration induced Authors to adviſe immediate amputation, at the wounded part; but in a wound of the *brachial* artery, far up the arm, when a pulſation is felt at the wriſt, that circumſtance will juſtify treating the caſe according to the method propoſed in Page 175, 176, or like the falſe *aneuryſm*; for nature varies in the arterial ſyſtem, and ſometimes that artery is divided into two, long before it arrives at the joint; and I have ſeen an inſtance, where the diviſion was juſt after leaving the *axilla*, the ſuperior branch of it making the *radial*, and the other the *ulnar* and *median artery*. Doctor *Hunter*, the moſt celebrated Profeſſor of Anatomy that ever was in *London*, exhibits many arms, in his courſe of lectures, ſhewing this *Luſus Naturæ*, at different diſtances from the joint.——This Gentleman's friendſhip and indulgence I ſhall ever remember with pleaſure and gratitude, having been infinitely obliged to him for his kind and frequent communications.

The treatment of an *aneuryſm* from a partial wound, or other injury done to an artery.

WHEN the external coat of an artery is wounded, both the other yielding to the lateral preſſure of the blood, it is to be conſidered, in the treatment of it, as a true *aneuryſm*, which may proceed from any external injury, weakening the artery, as we have before obſerved; whatever cauſe, be it external or internal, producing that effect, may give riſe to the diſeaſe. The characteriſtics, or diſtinguiſhing ſigns, of the different kinds of *aneuryſms*, have been ſpecified in the *Diagnoſis*, Page 84, 85, 86, which ſhou'd be well attended to, in order to prevent error of judgment, and conſequently dangerous miſtakes in practice. Upon the authority of Sergeant *Wiſeman*, *Hildanus*, *Tulpius*, *&c.* who were great practitioners and accurate obſervers, aſtringent applications, with compreſſion, have been tried; but as it is much to be feared, that a radical cure ſhou'd not be effected, by this method, perhaps, where it is practicable, as below the knee or elbow, it is more adviſable to perform the operation, as will preſently be directed; for ſhou'd the tumor be ſuffered to increaſe, and happen to burſt ſuddenly, having no proper aſſiſtance at hand, it wou'd endanger the patient's life.

Manner of performing the operation for an *aneuryſm.*

WHEN the operation is thought adviſable, it is to be thus performed, after preparing the patient by bleeding, gentle purging, proper diet, &c. if it does not require to be inſtantly done, and time can be allowed for the obſervance of theſe preparatory rules, generally neceſſary before any capital operation; otherwiſe they muſt be attended to immediately after, as the Surgeon ſees occaſion. The patient being placed in a good poſition and light, having the limb reſted ſteadily upon a table of a ſuitable height, the *apparatus* and aſſiſtants diſpoſed in order, and the *tourniquet* applied, a longitudinal inciſion is to be made into the tumor, the full length of it; and it may be requiſite to cut out an oval piece, as in opening a large abſceſs, in order to give an opportunity of removing the grumous or coriacious blood the better with the fingers or proper inſtruments, and ſpunges ſqueezed out of warm water and brandy, that the ſound parts of the artery may be come at the more commodiouſly, to paſs the ligatures above and below the diſeaſed part with a needle properly curved, either with or without a haft. If the ligatures cannot be

be conveniently paſſed, without hazard of including or puncturing the vein or nerve accompanying the artery, it is to be carefully ſeparated from them, with the point of the knife, when raiſed by the diſſecting *forceps* or hook. After having tied the ligatures ſecurely, which will be known by looſening the *tourniquet*, the next ſtep to be taken, or omitted at the Surgeon's diſcretion, as circumſtances ſhall direct, is to diſſect away as much of the diſeaſed artery between the ligatures, as can be done without injuring the adjacent parts, ſuffering the reſt to be thrown off in the courſe of digeſtion. Other two ligatures may be conveyed in at the ſame time the operation is performed, in order to obviate perplexity, ſhou'd a conſequent bleeding happen; leaving them looſe to be uſed occaſionally, if either of the other ſhou'd ſlip or loſe its power. This is a precaution that ſhou'd not be omitted: I once ſaw this omiſſion attended with ſuch inconvenience, as I wou'd willingly guard againſt.

Concerning the uſe of *ſtyptics* and *puff-ball*, after the operation for the *aneuryſm*.

WE muſt ſpeak with diffidence, in reſpect to the uſe of *ſtyptics* in this caſe, which ſome Surgeons have recommended and relied on, inſtead of the ligature; but I have good reaſon to believe, the *puff-ball*, prepared as directed, and applied exactly to the mouths of the veſſel, after cutting away the diſeaſed part, raiſing it above the ſurface of the wound, *ſtratum ſuper ſtratum*, might effectually anſwer the end in ſome caſes, with a due degree of perpendicular preſſure; avoiding ſtrait circular bandage, by the method which has been deſcribed, in the article of ſtopping blood by compreſſion; but the ligature is the ſafeſt practice, therefore preferable when it can be uſed conveniently.

Treatment of the wound after the operation.

AFTER the operation the wound is to be treated in the common manner, allowing the ligatures, and all the dreſſings, to become quite looſe, by digeſtion, before removal of them, uſing ſuch eaſy compreſs and bandage as have been recommended.

See the diſmal caſe related by Dr. *Hunter* in the *London medical Obſ. and Inq.*

WHEN a true *aneuryſm* happens to be formed, near the trunk of the body, where no operation can be practiſed, a bole plaſter, or

or ſome ſuch aſtringent application, with a ſoft, eaſy, and well adapted compreſs, obſerving a ſtrict regimen, and living upon a cooling diet, and bleeding now and then occaſionally, as an increaſed ſenſation of throbbing, or other ſymptoms may indicate, and avoiding all violent agitation of body or mind, is the proper palliative method, to prevent its more ſpeedy progreſs; and nothing more is to be done under ſuch deplorable circumſtances. (*a*)

A

(*a*) Some years ago I was deſired to ſee a tumor juſt beneath the *clavicle* of a young man, that evidently appeared to be an *aneuryſm* of the *ſubclavian* artery; in which caſe much preſſure gave pain, but a gentle bandage, with a well adapted compreſs, made concave according to the convexity of the tumor, and very ſoft, gave him eaſe, and proved of conſiderable uſe. This patient died ſome years after of a fever, and I had not the opportunity of inſpecting the parts, to trace the extent of the *aneuryſm*.

My opinion was lately aſked by an elderly Gentlewoman, of a ſtrong conſtitution and rather corpulent, concerning a very viſible pulſation of the *Aorta aſcendens*, in the hollow juſt above the *Sternum*. In all other reſpects, except now and then a ſlight uneaſy ſenſation in the *Thorax*, and difficulty of breathing for a ſhort duration, ſhe enjoys a good ſtate of health, and cannot aſſign any cauſe for the diſorder, nor recollect when ſhe firſt obſerved it. There is not yet any appearance of ſwelling externally, but it may be conſidered as an incipient *aneuryſm*.

The treatment of a falſe *aneuryſm.*

A FALSE *aneuryſm* is occaſioned, as has been deſcribed, by wounding all the coats of an artery; which moſt frequently happens in letting blood, a branch of the *brachial* artery, which generally divides at the bending of the arm, or juſt below it, often lying ſo ſuperficially, near the *baſilic* vein, that its pulſation may be eaſily felt and ſometimes ſeen, as has been remarked in the *Diagnoſis*; which monitory intimation ſhou'd be remembered in veneſection, to put the operator upon feeling for the pulſation, in order to avoid ſuch an unfortunate accident, as has happened to ſkilful Surgeons, through haſte or inattention. The orifice of the vein cloſing, though not in the artery, the blood coming from it is pent in, conſequently muſt diffuſe and inſinuate itſelf into the *cellular* membrane, and interſtices of the muſcles, where it meets with leaſt reſiſtance. This kind of *aneuryſm* requires the operation, as has been directed, without delay, to obviate the fatal conſequences that may attend procraſtination. (*a*)

WHEN

(*a*) Four ſuch caſes have fallen under my care, two of them in a recent ſtate, the other of long ſtanding and very threatening; but all ſucceeded ſo happily, that the patients have the perfect uſe of their limbs.

When the tumor, proceeding from this kind of *aneuryſm*, is become very extenſive through neglect, the wound, in the operation, muſt be made ample in proportion, to give room to cleanſe the parts well from the grumous blood; and after ſecuring the bleeding veſſel by ligatures, as has been directed, the wound is to be dreſſed and cured according to general rules; but ſhou'd a mortification have ſupervened, that muſt be particularly attended to, and treated accordingly, with *an antiſeptic* fomentation, digeſtives a little more animated than ordinary, applying them moderately hot, but not to excite pain, wrapping the whole limb up in a warm *cataplaſm*, prepared with the fomenting liquor *Farin. Hord. & Aven.* and *Spec. pro Cataplaſmate e Cymino*, which mixes up with the meals more uniformly, and with leſs trouble, into a proper conſiſtence, than by adding a portion of the *Cataplaſm. e Cymino*, and I think, makes a better application, than this *cataplaſm* alone, which

See the caſe deſcribed by Doctor *Hunter*, in the *London medical Obſ. and Inq.* vol. 1. 2. nothing ſimilar to it having been taken notice of before, in which the artery was wounded through the vein in bleeding, giving ſuch appearances.

which is commonly made uſe of for the ſame purpoſe; and it ſhou'd be remembered, not to apply it of a greater degree of heat, than gives a pleaſing ſenſation of warmth to the limb. Under this circumſtance, preſcribing the *bark* ſhou'd not be forgotten, when nothing contraindicates the uſe of that efficacious remedy; joining *Serpentar.* with it occaſionally, and giving *camphire* and volatiles at the ſame time, if the patient is very languid.

Of the treatment of wounds of the veins.

WOUNDS of the veins require no particular treatment; the *hæmorrhage* is generally ſuppreſſed without any difficulty, by dry lint or *puff-ball*, with proper compreſs and bandage, and are to be cured as wounds in common. But though the ligature has little to do in theſe kinds of wounds, yet, upon a ſuppoſition of the internal *jugular* being divided, in a wound of the neck, and it can be conveniently come at to paſs a ligature

(a) *Varices*, which are dilatations of the veins, ſometimes become very large and painful upon the legs, requiring opening, or even cutting quite away; which practice I have ſeveral times found neceſſary, and attended with a good effect.

gature about it, it is adviſable, upon the upper part only; two are not required, as in an artery, for obvious reaſons.

Of the cure of wounds of the *Lymphatics*.

THE cure of wounds of the *Lymphatics* comes next in order to be conſidered; whence ſometimes proceed an abundant diſcharge, as we have obſerved in the *Diagnoſis*. Lint or *Puff-ball*, moiſtened in *Alcohol Vini*, or a ſolution of *Alum* and *Sacchar. Saturni* in *Aq. Calc. & Alcohol Vini p. æ.* will generally anſwer the purpoſe, when carefully applied with good compreſſion and but ſeldom dreſſing, as I have found by repeated experience. Upon the authority of a very eminent man, the needle and ligature may be advantageouſly uſed; and this practice I have alſo found ſucceſsful, where the veſſel cou'd be well included; but when this limpid effuſion comes from a wound of the *parotid*, or other *ſalivary glands*, the above-mentioned treatment muſt be continued, till the veſſels collapſe, and the generation of fleſh ſtops their leaks; then the wound requires only common management to heal it. (*a*) WHEN

(*a*) About a year ago an elderly Gentleman came to me, on account of a wound which he had received three weeks before upon his wriſt, juſt above the *piſiform*

Of the cure of wounds of the nerves and tendons.

WHEN the nerves or tendons are punctured, partially or totally divided, they demand more attention, than wounds of the fleshy parts; in order to prevent pain and inflammation, by emollient fomentations, cataplasms, embrocations, &c. The most suitable applications to the nervous or tendinous part itself are those of a subtile spirituous nature, such as *Sp. Terebinth*, dressing the other parts of the wound with vulnerary balsams, as has been directed. The congruity of the applications may be known, in a

form bone, wherein the tendons were laid bare. The wound was now in a foul, bad condition, attended with great pain and inflammation, and had been very improperly treated by a pretender to Surgery, who made very light of it. All the way from this wound I cou'd trace a *lymphatic*, lying rigid like a very small cord in the *cellular membrane*, immediately under the skin, till it sunk into the *axillary gland*: and in the whole course of it there was some tenderness, with a slight degree of inflammation, not extending more than a few lines beyond it. An emollient embrocation soon removed the rigidity of the *lymphatic*, the tenderness and inflammation, after the wound was made easy by lenient dressings; and the cure was effected without any difficulty, by the quite contrary treatment to that which had been practised.

See note in pag. 9 of Doctor *Hunter's* dissertation upon the *Lymphatic vessels*, in his *Medical Commentaries*, relating to Doctor *Macaulay's* case.——And histories of the cure of *Lymphatics* opened in wounds, by Professor *Monro*, in *Med. Essays*, vol. v.

a good meaſure, by the agreeable and pleaſing ſenſation of warmth they give to the parts, without creating pain. Upon this head we may conſult *Ruyſch*, *Meck'ren*, *Fab. ab Aquapendente*, *Wiſeman*, and other practical Writers. Some Authors have recommended *Euphorbium*, and ſuch acrid applications, to the expoſed nerves and tendons, but they are dangerous, and may prove of fatal conſequence; as *Hollerius* and others teſtify. When the wound is too ſmall to admit of applications directly to the nerve or tendon itſelf, it will be right to enlarge it for that purpoſe, and to give room for a free diſcharge of ſuch acrimonious matter, as theſe wounds are apt to produce. It ſometimes happens, that a train of direful ſymptoms attend a puncture or partial diviſion of a nerve or tendon, making it abſolutely neceſſary to divide them totally, in order to ſave the patient's life; of which we have inſtances, upon good authority, to encourage the practice; yet, as the total diviſion of them may deprive ſome material part of ſenſation and motion, this conſideration ſhou'd engage our earlieſt and cloſeſt attention to the rules juſt mentioned, to prevent the

Sometimes abſolutely neceſſary to divide the nerve or tendon totally.

Total diviſion of the nerve or tendon to be avoided if poſſible.

Proper poſition to put the limb into.

the neceſſity of taking ſuch a ſtep. In wounds of theſe parts, the limb muſt be put into ſuch a poſition, that they may ſuffer as little divulſion as poſſible. More than ordinary care ſhou'd be taken to avoid expoſing theſe wounds to the cold air. No oleaginous or cold applications ſhou'd be made to them: and it is moſt adviſable to uſe the fomentation before the removal of the dreſſings; as through them it will give a genial warmth, and have its proper effect, without expoſing the wound to the influence of the air; but notwithſtanding all precaution, a ſlough, thicker or thinner, will be ſuperinduced upon the tendon, which the terebinthinous application will digeſt off, better than any I know; and then the wound will be ſoon healed by the common treatment.

ALL

Hiſtories.

Augenius writes of a Taylor, who died in conſequence of a prick with his needle, between the nail and fleſh at the end of his thumb.

Amatus Luſitanus mentions a ſimilar caſe, in an old woman, which was attended with convulſions, &c.

Glandorpius relates a caſe, where the tendon not being totally divided, dreadful ſymptoms enſued, which ceaſed upon the total diviſion of it, after all other means were tried in vain.

The ſame author alſo gives us this memorable hiſtory. A Nobleman, of a *cacochymic* habit, and infected

AUTHORS, before thoſe of the preſent age, have recommended ſtitching the *Tendo Achillis*, when totally divided; but the moſt eminent and experienced Surgeons now, diſapprove that practice: and evidently with good reaſon, adviſing to have the ends of the divided tendon brought, and kept, as near together as poſſible, by a favourable poſition of the limb; which is effected, by bending the knee and heel, and extending the foot, to ſuch a degree as is eaſy to the patient; keeping it ſo, after dreſſing the wound, according to the preſcribed rules, by the following bandage, firſt, equaliſing the ſmall of the leg with ſoft, well adapted compreſſes of linen cloth, fine tow, or quilting cotton, the latter of

Stitching not adviſable in a diviſion of the *Tendo Achillis*.

Proper poſition to keep the limb in.

fected with the *Lues venerea*, received a wound into a nerve in a duel, which was ſoon attended with pain, fever, delirium, &c. At length a total diviſion of the nerve was propoſed, but not complied with; ſoon after, an *Emproſthotonos*, and other direful ſymptoms, ſupervened, and he died miſerably, without reſource. ——The ancients uſed the word nerve in too great a latitude; ſometimes they meant tendon by it, but now its acceptation is fixed, and it is not uſed ſynonimouſly.

Many years ago a poor woman was my patient, on account of a ſlight puncture with her needle, between the nail and fleſh of her fore-finger, which was attended with very violent ſymptoms; and ſhe loſt the whole of the firſt joint, notwithſtanding the utmoſt care to preſerve it.

Bandage adapted to this purpose.

which is preferable to the other. Begin the bandage, by making a few circular turns of a roller, of a ſufficient length and breadth, about the thigh, juſt above the knee, paſſing it round below two or three times, deſcribing a figure of 8; deſcending then in regular ſpiral revolutions, with ſmall edgings, that it may lay even and eaſy, down to the ancle; making there a few turns, as about the knee, proceeding ſpirally to the toes; where, after making a few circulars, the roller is to be faſtened with a needle and thread, reflecting it from thence upon the ſole of the foot, up the back part of the leg, to the circulars above the knee; ſecuring it well there, and in the whole courſe of it, with a needle and thread; taking particular care, all the while, to have the limb kept in its true favourable poſture, by proper aſſiſtants; and when this is done, it is neceſſary to have it reſted upon a pillow in bed, ſtrictly injoining the patient's own care, to keep the limb quiet. The application of this banbage may be begun upon the foot, at the toes, leaving a portion of the roller there, to be reflected, ſecured and fixed as before deſcribed.

THOUGH I have ſucceeded by both methods, yet I muſt give the preference to the preſent practice, without ſtitching; however, ſhou'd ſtitching be thought by the Surgeon, under any particular circumſtance, more adviſable, inciſion muſt be made, to come fairly at the end of the tendon, that is retracted with the muſcle, when the diviſion of it is at any conſiderable diſtance from the muſcle, doing the ſame below, if found needful; and then, with the fingers or *forceps*, firſt putting the limb into the poſition deſcribed, favouring the approximation of the ends, they are to be brought into contact, or as nearly ſo as poſſible, keeping them together by the interrupted ſuture, made with the needle, appropriated to this uſe; after which, the ſticking plaſters, applied as have been directed in uniting wounds, in order to aid the ſtitches, may prove, in ſome meaſure, uſeful, and the bandage, &c. as juſt now deſcribed, are to be uſed and attended to. By whichſoever method the cure is performed, great care and caution muſt be obſerved, when the wound is healed, that the extenſion may be made very gradually, in order to have the tendon acquire its former

Rules to be obſerved ſhou'd ſtitching be practiſed.

A caution very neceſſary to be obſerved.

length, without running the hazard of deſtroying its union, before the intermediate ſubſtance is grown ſufficiently firm. And in the cure of wounds of theſe parts, ſtrict regard ſhou'd be paid to the Non-naturals.

Of

Hiſtories.

There are two caſes of ruptured tendons in the *Mem. de l'Acad. roy. des Sciences*, in which, the ſkin was not broke; and the cures were performed, by proper bandage, and poſition of the limbs. I have had one ſuch, under my care, which ſucceeded as happily, by the ſame management.——*Monſ. Petit*, in his treatiſe *des maladies des os*, mentions a ſoldier, who ruptured both at once, in jumping, without hurting the ſkin, and which he cured in the ſame manner.——See Profeſſor *Monro's* own caſe, in the Eſſays and Obſ. phyſical and literary, Vol. 1, in which he deſcribes a machine, of his own invention, to anſwer more effectually the end of our bandage.——I never ſaw the tendon, commonly called the *ligament*, belonging to the *patella* ruptured, before the laſt year; and then in a ſhort ſpace of time, two ſuch caſes came under my obſervation: the firſt was in a young woman, who about 11 months before, going out of one room into another, ſtruck her knee againſt the door-poſt, diſlocated the *patella*, fell backward at the ſame inſtant, and ruptured the tendon. When I firſt ſaw her, the limb was much emaciated, great pain attended the joint, with an inability of extending the leg, and ſhe appeared abſolutely incurable. The other accident of this kind happened to a Gentleman of our faculty, aged about 40, by a fall from his horſe; but by keeping his limb properly ſupported, &c. he recovered conſiderable uſe of it. Both theſe caſes were ſeen by ſeveral other Surgeons, who had never obſerved the like before.

Of poiſoned wounds, venomous bites, &c.

Of poiſoned wo ds and thei cure.

We are not to apprehend meeting with poiſoned wounds, except among Indians and Barbarians, whoſe practice has been to poiſon their weapons of war. It may be a difficult matter to diſtinguiſh, by their appearances, poiſoned from other wounds, which may have a very ill aſpect, and be attended with the moſt violent ſymptoms, as we have ſeen, ariſing from various other cauſes, without any ſuſpicion of poiſon; but when there is ground for ſuch ſurmiſe, as ſoon as we are called, we ſhou'd enlarge the wound, if it is ſmall, uſe the ſtrongeſt ſuppurative applications and warm *cataplaſms*; keeping the wound open, as long as we can; dreſſing, at leaſt, twice in a day, and giving ſuch *alexipharmics*, as the nature of the poiſon requires, which demands particular inquiry and attention, to diſcover whether it is of the vegetable, or mineral kind.——I have been told, the Indians dip their arrows into the juices of pu-

trid human bodies, looking upon them, ſo prepared, as the moſt deſtructive; and, I think, Lord *Verulam* has ſomething to this purpoſe in his Writings.——*Theophraſtus* ſays, the *Æthiopians* dipped their arrows into the juice of poiſonous plants; and *Matthiolus* tells us, that arrows or balls, impregnated with the juice of white *hellebore* cauſe ſpeedy death.——Some Europeans have been ſuſpected of ſuch diabolical practice, with *Arſenic, Merc. ſublim. corroſ. &c.* but it is to be hoped, in theſe days, there is no foundation for it, in any chriſtian Country, or where they are not devoid of all ſentiments of humanity.

Cure of the bite of a mad animal &c.

In the bite of a mad animal, or venomous creature, it wou'd be no irrational practice, though too ſevere for ſome, to have a piece of fleſh inſtantly cut out, including the bite; or to have the *actual cautery* applied, in order to prevent the entrance of the poiſon into the blood; treating the wound afterwards, as has been directed, and having recourſe to *alexipharmics*. In the bite of a mad dog or other animal, the *Pulv. antilyſſus, Cinnabar & Muſk*, and mercurial medicines, &c. have their advocates.

cates. We may read *Mead*, *Layard*, *James*, *Nugent*, *Deſault* and *Choiſel*, upon this ſubject. I believe I have uſed, more than a hundred times, the *Decoct. ad Morſ. Canis rab. Batean.* prepared with the addition of *ſage* and aſh-coloured *liverwort*, without a ſingle miſcarriage, when the patient took it regularly, before the appearance of the *Hydrophoby* or other ſymptoms of madneſs; but after having read *Deſault's* book, above twenty years ago, I generally uſed mercurial ointment as he directs, at the ſame time, endeavouring to avoid a *Ptyalyſm*.—It appears, by the *Mem. de l'Acad. roy. des Sciences*, that *Monſ. Tauvry* was acquainted with mercurial unction on this occaſion, about the concluſion of the laſt century.

Of the cure of the bite of a viper, and the ſtinging of venomous inſects.

The bite of a viper is effectually cured, as has been fully proved, by rubbing warm *Olive Oil* long and plentifully upon the part: and viper oil or fat, which ſhou'd be freſh, is a ſovereign remedy againſt the ſtinging of bees, waſps, hornets, and other venomous inſects. (*a*) Of

(*a*) Concerning poiſoned wounds, &c. *Celſus*, *Paré*, *Schenkius*, *Heiſler*, *&c.* may be conſulted.——*Cælius Aurelianus* has written more fully upon the *Hydrophoby*, proceeding from canine madneſs, than any of the ancients.

Of the accidents belonging to wounds.

Hæmorrhage.

1. An *hæmorrhage*, more or leſs, is a concomitant, or inſeparable accident, accompanying wounds; but what has already been ſaid upon this head, in the treatment of wounds of the blood-veſſels, and previous to that, what relates to the uſe and efficacy of *ſtyptics*, &c. make it unneceſſary to ſay any thing more here to this purpoſe.

Contuſion.

2. Were we to diſcourſe on the article of *contuſion*, enumerating its various effects and conſequences, in the different parts of the body, both internally and externally, we ſhou'd exceed our deſign, which is to conſider it only as an object in the cure of wounds, coming immediately under inſpection; but the effect of a blow, by an obtuſe inſtrument, occaſioning a wound, may extend even to the *faſciculi* of muſcular *fibres*, connected by *cellular* membrane, breaking the *capillary* veſſels, innumerably interſperſed in the muſcular *compages*; and this conſideration demands particular

attention

attention in contuſed wounds, when the patient's complaint exceeds what we ſee cauſe for, and gives us reaſon to ſuſpect latent miſchief. As the contuſed and lacerated veſſels, apparent in the wound itſelf, are impediments to the reunion or healing of it, it is our buſineſs, to aſſiſt nature in the ſeparation of them, by moderately warm fomentations, digeſtives and *cataplaſms*; ſcarifying ſome, and cutting off other parts, that have loſt their vitality. Bleeding, gentle purging, and an exact regimen, are to be obſerved; and the patient cannot take too freely of reſolving and attenuating liquors, in order to keep the blood in a proper ſtate of fluidity, to prevent, or remove, obſtructions in the wound and adjacent parts. If great tenſion and inflammation ſupervene, emollient fomentations and *cataplaſms* are adviſable. A Decoction of *Flor. Cham. & Sambuc.* in new milk and water, makes a good fomentation, and bread, formed into a proper conſiſtence with it, and a little fine *Ol. Olivar.* is a ſuitable *cataplaſm* upon this occaſion; before the application of which, a plaſter of *Cerat. alb.* ſhou'd be applied over the

the dreſſing of the digeſtive to the wound, which may be ſoftened with the *Samaritan Balſam*, before recommended, and uſed warm, not hot: but ſhould there be a tendency to a ſpreading *gangrene*, as ſometimes happens in wounds violently contuſed, eſpecially in conſtitutions, where there is a depravation of the fluids, and laxity of the ſolids, then the *Fot. commun.* made *antiſeptic* with the addition of *Sal. ammon. crud.* or *Spirit. Mindereri*, and a *cataplaſm*, compoſed of this fomenting liquor, bread, *Farin. Hord.* and *Spec. pro Cataplaſmat. e Cymino*, are better accommodated to the purpoſe, with the uſe of the *bark* and *camphire*, if the patient is very languid. All theſe matters muſt be regulated by the Surgeon's conſtant attention; no invariable rules can be preſcribed.

Inflammation.

An inflammation, attending a wound, may prove of very ill conſequence, eſpecially when it is accompanied with contuſion, and laceration of the parts; and may terminate in a *gangrene*, if not timely prevented. Gentle dreſſings, applied to the wound itſelf, and emollient fomentations and *cataplaſms* are proper; veneſection, le-

nient

nient purgatives, and cool liquid diet, muſt be uſed plentifully, paying due regard to the Non-naturals. If the inflammation proves of the *eryſipelatous* kind, which frequently happens in wounds, the ſame general rules are to be obſerved.

Pain.

THE immediate ſenſation of pain, upon receiving a wound, is from the diviſion of the nervous fibrils, then from their divulſion; whence it may extend to ſome diſtance from the wound itſelf, which generally is not

The manner of preparing a very neat and uſeful ointment, *Cerate* and *Liniment*.

An ointment, prepared according to art, with the pureſt white part of *elder flowers* boiled in freſh *Axungia porcina*, in a tinned pan, with the gentleſt degree of fire, ſtirring it all the while very carefully, to preſerve its whiteneſs and fragrance, free from *empyreuma*, is a neat and efficacious application in inflammations: and with the addition of *Cera alba* makes a *cerate* inferior to none for ſuch purpoſes.——In *eryſipelatous* caſes, *camphire* may be added to the ointment, firſt reduced into fine powder, and then well rubbed and incorporated with *Ol. Olivar. optim.* giving it the conſiſtence of a liniment, to be applied with a feather, and a plaſter of the *cerate* over it. Theſe applications I have long uſed, much to my ſatisfaction.——In order to prevent an *empyreuma*, and the ointment from being robbed of its fragrance, and pure whiteneſs, it may be made in *Balneo Mariæ*. I have had it lately prepared for me in that manner, by pouring the *Axungia* boiling hot upon the flowers, in a well glazed earthen pot, keeping it cloſe covered 8 or 10 hours, in a kettle of boiling water.

not of long duration, nor much to be dreaded; but afterwards, pain in wounds, from various cauſes, may ariſe to ſuch a degree, as to affect the whole body; diſturbing all the operations of the animal œconomy, and nervous ſyſtem, becoming, by its exceſs and continuance, of the moſt dangerous conſequence. It is the moſt violent ſtimulus, it breaks the patient's reſt, brings on fever, inflammation, convulſions, &c. therefore all endeavours ſhou'd be uſed, to remedy this grievance, as ſpeedily as poſſible: and, in order to effect this important purpoſe, we have to conſider the different cauſes of pain, that we may avoid falling into miſtakes in practice. It may be owing to ſome extraneous body, vellicating the ſenſible parts;—to the application of acrimonious medicines;—to the half, or partial, diviſion of a nerve or tendon;—to inflammation and tenſion, diſtracting the nervous *fibrillæ*;—to too ſtrait bandage, or an ill poſition of the affected part. The nature of the cauſes plainly indicates the means of removing this dreadful evil; as the extraction of the extraneous body;—the application of emollient and anodyne medicines,

The different cauſes of pain to be conſidered.

medicines, ſuch as a white-bread poultice, &c.—the total diviſion of the nerve or tendon, if all other attempts fail;—to take off the inflammation and tenſion, by the methods already preſcribed;—to alter the bandage, making it only retentive; and to change the poſition of the limb or part: but when our deſign of removing this threatening ſymptom, by theſe meaſures, is not ſoon anſwered, it is neceſſary to have recourſe to opiates, to aſſuage it, given in proportion to its violence, till the cauſe can be effectually removed. (*a*)

Convulſions.

Convulsions are the laſt ſymptoms we have to encounter, and are to be looked upon as the moſt formidable attending wounds. They are involuntary contractions of the muſcles, proceeding from various cauſes, affecting the nervous ſyſtem, particularly from irritations of the nervous or tendinous parts. They may ariſe from inanition,

(*a*) From what has been ſaid upon this article, we may obſerve, how neceſſary it may ſometimes be found, when we are obliged to make painful applications, to uſe lenients and anodynes, to mitigate the pain, as much as we can, and prevent inflammation — See Diſſertations upon pain and anodynes by Meſſ. *Louis*, *Guyot* and *Fabre*, in the *Prize Mem. of the roy. Acad.* of *Surgery* for the year 1745.

nition, when profuſe *hæmorrhages* debilitate the circulation, conſequently the nervous influence, and every animal function, ſuffer; and the ſame inordinate muſcular motions may be produced by repletion. The methods of cure are indicated, by a proper attention to the cauſes whence they proceed; as, by removing the offending body, when they proceed from irritation; by giving nutrimental broths liberally, when from inanition, and by evacuations, eſpecially veneſection, when they ariſe from plenitude of the veſſels; living upon very low diet. *Hippocrates* ſays, "*Morbis a plenitudine ortis mederetur evacuatio, illis vero qui inanitione fierent, mederetur repletio.*" There is a remarkable caſe to this purpoſe in *Lower de Corde*, Pag. 75, *Edit. Septim.*

The cauſes to be attended to in the cure.

Celſus and others ſpeak of four kinds of *ſpaſms* or convulſions, that may happen in wounds. 1. The *Emproſthotonos*, which draws the neck and other parts of the body forwards. 2. *Opiſthotonos*, a motion directly oppoſite to that. 3. *Tetanus*, which is that ſpecies of *ſpaſm*, wherein we obſerve

Different kinds of convulſive affections attending wounds.

ſerve both anterior and poſterior parts of the body affected, becoming rigid and inflexible. 4. The *Spaſmus cynicus*, ſometimes called *Riſus ſardonicus*, is that kind, in which the mouth is drawn awry.

Of the locked-jaw.

THE locked-jaw is to be conſidered as a ſpecies of convulſions, and uſed to be looked upon as a mortal ſymptom, in wounds, without reſource, till *Opium*, that heavenly remedy, was found to be a cure for it; of which we have ſeveral inſtances, in the *London medical Obſervations and Inquiries*.——It appears from what *Hippocrates* has recorded in the ſeventh Book of his *Epidemics*, that this kind of convulſive diſorder had not paſſed unobſerved by him, but he deemed it a mortal ſymptom. He mentions the caſe of a maſter of a ſhip, where, in conſequence of a wound upon his finger, an *Opiſthotonos* attended a locked-jaw, which proved fatal. (*a*)

Hippocrates not a ſtranger to this ſpecies of convulſion.

(*a*) See Doctor *Chalmers's* account of the *Opiſthotonos & Tetanus*, in the 1ſt vol. of the *London Medical Obſervations and Inquiries*. He is a Phyſician of eminence at *Charles-Town* in *South-Carolina*, in which Climate theſe convulſive diſorders are much more frequent than in *Europe*.

Of

Of the extraction of extraneous bodies.

Extraction of extraneous bodies.

THE extraction of extraneous bodies, is a part of Surgery that demands particular conſideration and attention. Under the denomination of extraneous bodies, are compriſed thoſe that will not unite with our ſolids, but hinder the reunion of the parts, wherein they are lodged, whether they be of metal, wood, ſtone, cloth, &c. and looſe fragments of bones, dead contuſed fleſh, coagula of blood, are to be conſidered as extraneous bodies; poiſon alſo may be included, but we ſhall principally attend to ſuch, as may be taken hold of and extracted by hand or inſtrument.

THE ancients had opportunities of ſeeing a greater variety of extraneous bodies in wounds, than we have, becauſe of the various deſtructive inſtruments of war they uſed; whereas what we uſe are chiefly cutting weapons and ſhot. The inſtruments employed in extracting theſe bodies, we may

ſee

ſee delineated in *Scultetus's Armamentar. chirurg.* taken from authors who have treated on this ſubject, as well as thoſe of his own invention; but the modern military Surgeons have, with good reaſon, much reduced the number.

Place for the extraction of extraneous bodies.

AFTER having diſcovered the extraneous body, the place for extraction of it, is that by which it entered; unleſs there is apparent danger of wounding ſome large blood-veſſel, or other part of conſequence, or it be lodged near the oppoſite ſide of a limb, or other part of the body; or being of ſuch a ſhape, that it cannot be returned the ſame way it entered, without great laceration of the parts; as a bearded arrow, for inſtance, which requires to be taken out the oppoſite way to that it entered, or the wound to be ſufficiently enlarged, to prevent laceration. (*a*)

Hiſtory from *Geſner*.

IN order to extract the extraneous body, in the firſt manner propoſed, we are to place the patient, as near as poſſible, in the poſture he received it, for it is plain, thus the paſſage will be more direct. *Geſner* mentions a very pertinent inſtance, of a

(*a*) See *Gilpin's* life of *Ziſca*, that famous *Bohemian* General and Reformer, who had his eye torn out of its orbit in the extraction of a barbed arrow.

Surgeon, who, after many fruitleſs attempts to extract an arrow, aſked the patient, in what poſition he received it, and after underſtanding it was on horſeback, he placed him in a riding poſture, and immediately drew out the weapon without difficulty.

What neceſſary to be done when the orifice of the wound is ſmall.

When the orifice of the wound is ſo ſmall, that we cannot commodiouſly introduce inſtruments, to extract the extraneous body, we are to enlarge it, if practicable, without injuring any large veſſel, nerve or tendon; and after having gained good, clear hold of it with the *forceps*, we muſt proceed cautiouſly, firſt moving them from ſide to ſide, upwards and downwards, before we begin to draw, in order to looſen it, and dilate the parts, then extract it gently and gradually, to avoid lacerating them, applying the left hand to the place, whence the ſubſtance is to be extracted, in order to keep the member or part firm; and, under ſome circumſtances, the operator may feel the courſe of the inſtrument, and be better directed, by this means, what turns to make, to facilitate the extraction.

When

When the caſe is ſo circumſtanced, that we are obliged to attempt extraction of the foreign body, on the oppoſite ſide to its entrance, we are firſt to conſider, what parts we have to cut thro', before we come at it, and when we know there are none in the way, that it is dangerous to wound, we may cut directly and boldly upon it, making the aperture in proportion to the ſize of the body, when we can judge of that; however, too large, rather than too ſmall, to avoid putting the patient to unneceſſary pain, and contuſing and lacerating the parts in the extraction of it; proceeding then to finiſh the operation as directed.

What to be conſidered when it is found neceſſary to extract the extraneous body on the ſide oppoſite to its entrance.

The moſt ſeaſonable time for performance of this operation, is generally immediately after the wound is inflicted, before inflammation and tenſion come on, which adding to the ſenſibility of the parts, muſt conſequently occaſion more pain in the doing of it; beſides, whilſt the extraneous body remains in the part, it may excite violent ſymptoms by irritation, as we may ſee in the caſe related by *Wiſeman*, of a Nobleman's ſervant, who was ſhot by a high-

The proper time to extract extraneous bodies.

wayman : and *Bidloo* in his *Exercitat. anatomic. chirurgic.* gives an account of a ſoldier in the Engliſh army, that loſt his life thro' the obſtinacy of a Surgeon, who refuſed to cut upon and extract a ball, which laid very favourably for the operation, between the fourth and fifth rib.——A few years ago the following caſe came under my inſpection.

An extraordinary caſe.

A YOUNG man, as he was earneſt at his work, requiring the uſe of his knee, was ſenſible of ſomething piercing the top of his thigh, three or four inches from the joint, but cou'd not diſcover what it was. An able Surgeon attempted, ſoon after the accident, to find what he apprehended might be lodged therein, and directed by the appearance of a puncture not bigger than a pin hole, and by the patient's complaining of an extreme pungent pain upon preſſure, he made inciſion in ſearch of it, but in vain. Many weeks after, I was called into conſultation, the ſymptoms becoming very threatening ; a conſiderable fever was raiſed, violent pain attended the thigh, and he was not able to ſet a ſtep, without having the whole

whole limb thrown into ſpaſms; but the ſwelling and inflammation were inconſiderable. We examined the limb with the utmoſt care, and upon preſſure, ſeveral inches from where the puncture was, under the *Faſcia Femoris*, he complained of a very acute pricking pain, which inſtantly brought on the ſpaſms. Theſe conſiderations determined us, without heſitation, to make inciſion upon that ſpot, through the *Faſcia*, where we fortunately diſcovered and extracted a needle, about two inches long; upon which the ſymptoms vaniſhed, and he was ſoon cured.

When adviſable not to attempt extraction of an extraneous body.

NOTWITHSTANDING the obvious diſadvantages of ſuffering extraneous bodies to remain in wounds, yet if tenſion and inflammation have already ſeized the parts, the orifice of the wound being almoſt cloſed, the ſubſtance lying deep, and the patient weak and languid, the pain which the operation, under theſe circumſtances, muſt neceſſarily occaſion, probably wou'd greatly increaſe the inflammation, raiſe the fever to a high degree, and perhaps throw the patient into convulſions; therefore it is adviſable

ſable to poſtpone it to a favourable opportunity, applying emollients and anodynes, and paying due attention to the patient's ſtate and condition in all reſpects.

Sometimes proper to leave the extraneous body to grow looſe in the wound by ſuppuration.

SHOU'D a large extraneous body happen to be lodged deep, and firmly fixed, ſo that it cannot be brought away, without great laceration of the parts, nor inciſion ſafely made, to facilitate the extraction, it is prudent not to venture to attempt it, but to wait, till it looſens by ſuppuration; which ſhou'd be promoted by emollient *cataplaſms*, and ſuch applications; then, there is reaſon to expect, it may be extracted with more eaſe and ſafety. There is a memorable caſe to this purpoſe in the *Journal des Sçavans*, for the year 1735.——Caſes of this nature call upon the Surgeon for deliberate conſideration and attention.

Under ſome circumſtances not to ſearch after a foreign body ſuppoſed to be lodged in a part.

UPON a ſuppoſition, that a foreign body is lodged in a part, though it cannot be diſcovered, we ſhou'd not torment the patient, by cutting at random to find it, becauſe we may do much more harm by the ſearch, than its continuance in the part wou'd occaſion;

caſion; for we have inſtances of various kinds of ſubſtances being lodged in different parts of the body a long time, without doing any remarkable injury.——*Hippocrates* relates the caſe of a perſon, who was wounded in the groin with an arrow, the head of which remained in the part, yet he found no inconvenience from it, till ſix years after, when it was diſcovered, inciſion made upon it and extracted.——*Deckers* tells us of a Gentleman, who was wounded in the right *Hypochondrium*, and, thirty years after, had the ball extracted at his knee.——*Alexander Benedictus* ſays, that a *Greek* was wounded on the right temple with a dart, at the ſiege of *Colchis*, and taken captive by the *Turks*; after the wound was healed, he lived twenty years in ſlavery, then obtained his liberty, and came to *Sidon*; five years after that, as he was waſhing his face, he was ſeized with a fit of ſneezing, and diſcharged, at one of his noſtrils, a piece of the dart, with the iron point of a conſiderable length.——*Hildanus* gives an inſtance of a piece of a ſword, that was lodged in a Gentleman's face ſeveral years, before it was extracted from an *abſceſs* then formed: and

Hiſtory from *Hippocrates* to this purpoſe.

From *Deckers*.

From *Alexander Benedictus*.

From *Hildanus*.

and he relates a caſe, in which a ball remained ſix months between the ſkull and *Dura mater*, without producing any bad ſymptoms.——*Amatus Luſitanus* ſpeaks of a drunken Courteſan, who, in a fray, was wounded with a long ſharp-pointed knife; in which caſe, the wound healed, and ſhe found no defect in her animal or rational faculties; but eight years after, dying of a fever, and her head being opened, a large piece of the knife was found between the ſkull and *Dura mater*.——*Monſ. Le Dran* in his treatiſe on gun ſhot wounds, ſpeaks of his own knowledge concerning the lodgment of a ball near the *Sella turcica*, the patient dying ſuddenly a year after the accident.——An eminent Surgeon of my acquaintance told me of a caſe, in which a ball was extracted, and ſome months after, a piece of cloth was expelled, till which time the wound kept open, but was then ſoon healed.——In *Chelſea-Hoſpital*, an old ſoldier had a piece of rag diſcharged from a wound, that it had kept open many years, which then healed without any trouble.——Hence we ſee, nature often exerts herſelf, to get rid of an extraneous body,

From *Amatus Luſitanus.*

From *Le Dran.*

From a friend of veracity.

Caſe obſerved in Chelſea-Hoſpital.

Nature's efforts to relieve herſelf.

by

by ſuppuration, or raiſing an *abſceſs* in the part, where it is lodged, and by that means expells, or brings it near the ſurface, ſo as to be eaſily extracted.——On this occaſion I may alſo relate, from a Gentleman that knew it, the caſe of a boy in the *Hôtel Dieu* at *Paris*, who three weeks after ſwallowing a long needle, in a piece of bread, had an *abſceſs* formed a little below the navel, on the right ſide, and the needle extracted from it.——*Ruyſch*, *Purmannus* and *Hoffman* take notice of ſuch caſes.——*Wiſeman* inveighs againſt too much endeavouring to extract extraneous bodies, giving inſtances of nature's efforts to relieve herſelf, yet when they can, with convenience and ſafety, be removed, they ſhou'd not be left.

A caſe obſerved at the Hôtel-Dieu at *Paris*.

It is no irrational ſuppoſition, that a weapon ſhou'd pierce the *Aorta* or *Carotid*, and ſtop the aperture ſo cloſe, that little or no blood cou'd immediately eſcape, the patient ſurviving the infliction of the wound a ſhort ſpace of time, though death wou'd inſtantly follow the extraction of it; and probably this might be the caſe of *Epaminondas*, as recorded by *Cornelius Nepos*, who,

A ſuppoſition not altogether unworthy the Surgeon's attention.

Caſe of *Epaminondas*.

who, fighting againſt the *Lacedæmonians*, was ſenſible of having received a mortal wound, and apprehending he ſhou'd die, as ſoon as the head of the lance was drawn out of his body, it was kept in, till he was told the *Bæotians* had conquered, upon which news, ſays he, "I have lived long enough, "for I die unconquered." The deadly weapon was then extracted, and the renowned General expired inſtantly.——*Petrus de Largenta* confirms the other part of the ſuppoſition, by a narrative he gives of a man, who, after being wounded in the neck, the arrow ſticking in one of the *Carotids*, ſpoke very well before the extraction of it, but died immediately after. (*a*)

Caſe from *Petrus de Largenta.*

(*a*) Some eminent Practitioners, of former ages, have looked upon the operation of extracting extraneous bodies rather unneceſſary, making great account of their ſecret applications, which they termed *attrahents*, but are to be looked upon only as *ſuppurants*; and what confirms this opinion is, that many of the medicines, for this purpoſe, mentioned in *Foreſtus*, *Mangetus*, *&c.* are no more than common digeſtives.

Of the Non-naturals, which are of great conſequence to be obſerved, in curing wounds, whether accidental, or after capital operations.

(1) The atmoſphere the patient breathes in, ſhou'd be dry, with a temperate degree of heat, free from all noxious vapours. Moiſt and cold air obſtructs perſpiration, whence proceed various diſorders; and intenſe cold contracts the veſſels, and coagulates or thickens the fluids; and when exceſſively hot, it produces putrefaction, and large ſuppurations with acrimony. The inconveniences ariſing from exceſſive cold, are to be remedied by fires, and for thoſe proceeding from immoderate heat, the patient's room is to be cooled, by opening a window, admitting the breezes and freſh air, placing large pots of water in different parts of it, with fragrant aromatic herbs and flowers in them, ſtrewing ſome upon the floor, which will diffuſe refreſhing and vivifying

Proper air for wounded perſons.

vifying *effluvia* to correct the ill effects of putrid exhalations, affecting the lungs, and animal œconomy. It often happens in hoſpital and ſhips, where great numbers of patients are crouded together, that ſuch a corrupt and ſtagnant air cauſes various diſorders, and the worſt kind of fevers; therefore thoſe who have the care of the wounded, cannot be too ſolicitous to have them breathe a pure, freſh, untainted air, impregnated, if poſſible, with a grateful fragrance, to refreſh the ſpirits; ſeeing that the ſick-room be kept neat and clean: and in order to correct putrefaction, vinegar may be ſprinkled upon the floor, and upon the bandages, mixed with lavender-water, or ſome ſuch pleaſant ſcented liquor; vinegar is the beſt antiputreſcent we have. (*a*)

Purity of air, neatneſs and cleanlineſs of the utmoſt conſequence to be attended to in Hoſpitals.

Of

(*a*) See what Sir *John Pringle* and Doctor *Donald Monro* ſay concerning this important matter, in their account of diſeaſes of the army; particularly the former Gentleman's obſervations on the jail and hoſpital fever.

Of Diet.

(2) DIET, in the cure of wounds, as well as diſeaſes, is often of the utmoſt conſequence to be attended ſtrictly to. *Hippocrates*, *Celſus*, and the beſt Writers ſince their days, injoin a ſpare diet in wounds, in order to prevent inflammation, fever, &c. ſaying, it ſhou'd be food that affords good juices; by which muſt be meant, ſuch as will ſoon digeſt, and be eaſily aſſimilated; not of a glutinous nature, that wou'd make our fluids viſcid, or apt to become putrid and acrid, tending to produce obſtructions, inflammation, &c. It ſhou'd principally conſiſt of the vegetable, farinaceous kind, and what animal food is allowed, ſhou'd be confined to weak broths, except under particular circumſtances, that will be ſpecified. Barley-broth, oatmeal-gruel, ptiſan, almond-emulſion, thin chicken or veal broth, &c. ſhou'd be taken freely. The patient may eat boiled or roaſted apples, boiled pot herbs, ſuch as ſpinage, lettuce, &c. avoiding every thing

Diet proper in wounds.

thing of a poignant, ſtimulating quality, for the reaſons we have given; as fleſh-meat high-ſeaſoned; all fermented liquors, as wine, beer, &c. or ardent ſpirits; all ſtrong ſoups or broths, and alcaleſcent plants, as cellery, creſſes, horſe-radiſh, muſtard, &c. in order to have a ſoft, balſamic chyle, that the blood may be free from acrimony, or tendency to an inflammatory ſtate, productive of fevers, &c. However, in ſome caſes, we muſt take care, we do not adhere too cloſely to theſe dietetic rules, in the cure of wounds. We muſt always have a regard to the ſtrength, weakneſs, and conſtitution of the patient; for if it is a weak, faint perſon, there is a neceſſity of giving good nutrimental broths, and temperate cordials, allowing wine, diluted with water, or even wine alone, as the beſt of cordials to ſome people. The patient's uſual manner of living muſt alſo be conſidered, remembering the old ſaying; Cuſtom is a ſecond nature, and certainly it is ſo; for when a perſon has been inured to a particular way of living, a ſudden and great alteration in it may prove very detrimental, which is evinced by daily obſervation.

Latitude to be allowed in Diet, under ſome circumſtances, in the cure of wounds.

The prevalence of cuſtom in reſpect to diet.

WHEN the *Dutch* acted in confederacy with us, the *Engliſh* army fed chiefly upon fleſh, and the *Dutch* upon vegetables; and in the different hoſpitals, the wounded men were treated accordingly; but whenever the *Dutch* were carried off to the *Engliſh* quarters, and *vice verſa*, many of both parties ſuffered greatly; the *Engliſh* grew faint and languid with a vegetable diet, and on the contrary, the animal food threw the *Dutch* into fevers.

Wiſeman's authority and others to this purpoſe.

OUR own Countryman, the great *Wiſeman*, ſhews the neceſſary latitude to be allowed on theſe occaſions, by ſeveral inſtances, particularly in a perſon, accuſtomed to drink wine too freely, that was bitten on the back of his hand by a monkey; and ſo long as he was obliged to abſtain from that liquor, he grew daily worſe and worſe, but when he was allowed it, he immediately grew better, and ſoon recovered.——*Bonetus* gives us the hiſtory of a young Gentleman's caſe at *Paris*, who being confined to broths, ptiſan, &c. and abſolutely forbid the uſe of wine, to which he was addicted, died of a wound in his thigh, though it was no

more

more than a ſimple one of the fleſhy parts, as appeared upon examination after death, which was aſcribed to too much abſtinence. ——Profeſſor *Monro* ſpeaks of a cook at *Edinburgh*, who had the cartilaginous part of his noſe cut off, and loſt ſo much blood, before he ſaw him, that he was ſcarce able to ſupport himſelf; after ſtopping the *hæmorrhage*, and dreſſing the wound, he ordered him broths, allowing him a moderate quantity of wine; however, according to his cuſtomary way of living, they were not ſufficient for him; he continued faintiſh for ſome days, complaining of great pain in the wound, and was ſeized with a *diarrhœa*; his wife then ſecretly gave him drams, to which he had long accuſtomed himſelf, and they had ſo good an effect, that his ſymptoms immediately abated, and he was cured in a ſhort time.

Seaſon of the year to be conſidered.

THE ſeaſon of the year is likewiſe to be conſidered in reſpect to diet, in the cure of wounds; thoſe kinds of things of a poignant nature, which we have cautioned againſt the uſe of, have worſe effects in ſummer than in winter; when indeed, ſome of

of them may prove beneficial in ſtimulating the circulation, which might become too torpid, for want of ſuch aſſiſtance.

Diſeaſe the patient may have when he receives the wound to be brought under conſideration, in reſpect to diet.

THE laſt thing we have to conſider, in relation to diet, is the diſeaſe the patient may labour under, when he receives the wound, or the ſymptoms that may attend it. If he is weak, or hydropic, ſtrengthening food, wine, &c. muſt be allowed; but if he is ſtrong plethoric and feveriſh, a ſpare diet is ſtrictly to be obſerved in general. Hence we may ſee, that according to different circumſtances and ſymptoms, different regimens muſt be preſcribed: and the ſame may be ſaid of medicines, which require as much variation. In order therefore to preſcribe properly, upon ſuch a variety of occaſions, the Surgeon, as we have hinted, muſt have a competent knowledge of the animal œconomy, of diſeaſes, and of the *materia medica*.

Sleep and Watching.

Sleep of great conſequence in wounds.

(3) THERE is nothing refreſhes a perſon like ſleep. The want of it cauſes the

greateſt fatigue and anxiety, and is frequently the occaſion of many diſorders. Pain is the great diſturber of reſt; therefore all poſſible endeavours ſhou'd be uſed, to remove or alleviate it, as directed under that article; conſidering the reſpective cauſes, whence it ariſes. The narcotic or anodyne remedies, which we have recourſe to, on theſe occaſions, to deſtroy the ſenſation of pain, till we can remove the cauſe, are poppies, and opium the inſpiſſated juice of thoſe growing in the *Levant*, of which we have a great variety of officinal preparations. Perhaps the ſtrength of the poppies of our own growth, is not ſo much inferior to them, as is generally imagined; for, by making inciſions in ſome fine large heads, growing in my own garden, I extracted the milky juice into proper receivers, where I ſuffered it to inſpiſſate with the heat of the ſun; and by experience found it nearly as ſtrong as the *Theban* or *Turky* opium. (*a*)

Motion

(*a*) See *Jones* on the myſteries of *opium* revealed: and the late *Profeſſor Alſton's* diſſertation upon *opium*, in vol. v. of the *Med. Eſſays*.

Motion and Reſt.

(4) ALL imaginable repoſe ſhou'd be recommended to the patient ſuffering under a dangerous wound; but motion is leſs prejudicial to thoſe wounded in the ſuperior, than in the inferior, limbs. The reaſon that reſt and quiet ſhou'd be ſo ſtrictly injoined, on this occaſion, is too obvious to want explanation; ſince the agitation of the body is well known to accellerate the circulation of the blood, and conſequently tends to produce inflammation. The patient ſhou'd not only keep himſelf as ſtill and compoſed as poſſible, but have the room kept free from noiſe, and rather dark, in very dangerous wounds in any part, but more eſpecially in thoſe upon the head. *Hildanus* mentions a melancholy ſtory of a boy to this purpoſe, who was brought to his grave by muſic and dancing in his room, which immediately occaſioned dreadful ſymptoms, though he was before in a very hopeful way of recovery.

Reſt to be injoined in the cure of wounds.

Hiſtory from *Hildanus* to enforce this attention.

Retention and excretion.

What kind of purgatives advisable in wounds.

(5) It is an invariable rule, not to prescribe strong purges for wounded persons; the stimuli of which will be apt to raise or increase feverish symptoms, and dissolve the fluids too much: but, at the same time, we must be attentive to avoid costiveness; for by retention of the *fæces*, they become more and more acrid and putrid, communicating, in some measure, their pernicious quality to the mass of blood. We are therefore, to keep the body soluble with laxatives, by the mouth, or in the form of clysters. *Manna, Cassia, &c.* called *Eccoprotics*, having a stimulating property in a low degree, are the proper medicines to answer this purpose.

Passions of the Mind.

Passions of the mind of the utmost consequence to be avoided by the wounded.

(6) All violent passions of the mind disturb the functions of the body, as grief, fear, anger, &c. for which reason, they shou'd

ſhou'd be ſtudiouſly avoided or ſubdued, that they may not gain the aſcendant or dominion. The patient ſhou'd be kept free from care, and in all poſſible good humour and tranquility; for the body always ſympathizes with the mind; and we have inconteſtible examples, proving the pernicious effects and conſequences of inordinate paſſions upon the wounded. *Hildanus* relates ſeveral inſtances, ſhewing their influence; particularly of two perſons, who were wounded in the hand, and, by exceſſive laughter, had moſt violent pain excited in the wounds, extending through the arm quite to the neck, attended with convulſions, which brought them into imminent danger. This great man attempts to account for the effects of riſibility in theſe caſes, ſupported by the authority of *Laurentius Joubertus*.——He alſo gives a narrative of a youth, who had a wound of his head, accompanied with a fracture of the ſkull, in whoſe caſe all things appeared fair, and promiſing; but being provoked to anger, he grew immediately feveriſh, ſoon after delirious, and

Hiſtories from *Hildanus*, ſhewing the effect of ſuch emotions.

died in four days.——The ſame author informs us of a man, whoſe *temporal* artery was divided, and the *hæmorrhage* reſtrained for five days, by a *ſtyptic*; but upon being then put into a paſſion, the artery burſt open, and the effuſion of blood was ſtopped with great difficulty.

Acts of venery to be interdicted.

ALL acts of *venery* are to be avoided; for they much accelerate the motion of the blood at the time, leaving all the powers of nature in a ſtate of debility, and diſorder the nervous ſyſtem.——

Hiſtories ſhewing the neceſſity of this interdiction, from *Hildanus*.

Hildanus proves the ill effects of venereal pleaſures, in the caſe of a young man, that was wounded on the head; who, ſix weeks after the accident, when the wound was nearly cicatrized, had a fever raiſed by ſuch an adventure, and died in a ſhort time. He farther confirms the bad conſequences, ariſing from this ſource, by an account of a perſon whoſe arm was amputated, and the ſtump almoſt healed; and who, from no other evident cauſe, but ſuch an act of indiſcretion, was ſeized with a fever, attended with delirium, which ſoon ended in convulſions and death.

death.——*Boerhaave* relates a caſe that proved fatal from the like cauſe.——A Practitioner of great note has expreſſed himſelf thus, concerning a patient. "It "was by the merciful providence of God, "that he recovered, having daily com- "merce with a Courteſan."——*Paré* ſays he has obſerved many inſtances of the dire effects of *venery* in wounds.

Concerning veneſection.

HAVING given a general deſcription of wounds, their *Diagnoſis* and *Prognoſis*, treatment, &c. as at firſt propoſed, we now proceed to the ſecond part, beginning with wounds of the head; but at the concluſion of this, it may not be amiſs, to ſay a word or two concerning *Veneſection*, which I had almoſt forgotten; that an evacuation of ſuch conſequence in the cure of wounds, as well as in diſeaſes, may not be improperly or indiſcriminately preſcribed. In old, weak or infirm perſons,

In reſpect to the Non-Naturals, we may conſult *Wainwright*, *Burton*, *Sanctorius's Med. Static. Keil's Med. Stat. Britan. De Gorter*, &c.

ſons, or when a great quantity of blood has eſcaped by the wound, it might prove very detrimental, and in ſmall wounds, unattended with ſymptoms of pain, inflammation, &c. it is needleſs; but in wounds, accompanied with ſuch accidents, in a patient ſtrong, young and plethoric, with a full, tenſe pulſe, it then becomes abſolutely neceſſary to take away blood, as plentifully as his ſtrength will bear; eſpecially in injuries of the head, as we ſhall ſhew, which practice is ſupported by the beſt, and moſt experienced Writers. ——Indeed the *French* uſe the lancet more freely than we do; and I am apt to think, from what I have obſerved in their writings, and heard of their practice, from eye witneſſes the moſt rational and intelligent, they ſometimes carry it to a dangerous exceſs, by weakening the vital powers, and relaxing the ſolids ſo much, as to bring on hydropic ſymptoms, hard to remove.——By endeavouring to avoid one rock, they ſplit upon another; robbing

the

the blood too much of its denſity or red globules, which, by ſome Phyſicians, is very ſignificantly called, *ſpoliation*.——Nothing in the practice of Phyſic requires more ſkill and judgment, than preſcribing in reſpect to this evacuation.

PART II.

Of Wounds, &c. of the Head.

IN this chapter we ſhall treat not only of wounds, but of the various kinds of injuries, incident to the head, and the *encephalon*; beginning with inciſed wounds of the ſcalp, muſcles, and *pericranium*.

Circumſtances to be attended to, in order to form a judgment concerning wounds of the head.

IN order to judge, whether only the external parts of the head are injured, we are to conſider the ſize and ſhape of the weapon; whether it has a ſtrait, or a riſing edge, by which the wound was inflicted; the degree of force uſed; and the length and figure of the wound. When it is long, made by a ſtrait, cutting inſtrument, we have reaſon, from the ſpherical form of the ſkull, to fear more may be hurt than the teguments; but if the wound is ſhort, to hope it extends no

farther

farther, unleſs made with a ſharp-pointed weapon, puſhed with great force; then indeed, though the external aperture is but ſmall, it may even penetrate into the cavity of the ſkull, and injure the *encephalon*, which are the parts therein contained; therefore it is neceſſary, to examine the weapon, carefully inſpect and explore the wound, and conſider the ſymptoms, in order to form our judgment.

Hippocrates ſays, "*Nullum vulnus capitis contemnendum eſt.*" which rule ſhou'd ever be remembered.

It is a general rule, firſt laid down by *Hippocrates*, the great Luminary of medical ſcience, never to be haſty in delivering a *prognoſtic*, in wounds of the head, or to make light of ſuch injuries, upon that part though they may appear trivial; for we have, upon record, many inſtances of ſuch wounds, unattended with any threatening ſymptoms at firſt, that have proved mortal.——*Hildanus* tells us, that a young Lady, when warm with dancing, ſtruck her head againſt a poſt, making a ſlight wound, which ſhe neglected two days, being ſenſible of no uneaſineſs; it becoming then a little painful, a Barber-Surgeon was called to her, who made very light of it; but, on the fourth day, ſhe

Hiſtories teaching us to be very cautious in preſaging the event of wounds upon the head.

ſhe grew feveriſh, and complained of extreme pain; on the ſixth, delirious ſymptoms came on, and ſhe died ſoon after. In this caſe, no external injury of the ſkull cou'd be diſcovered, but upon opening it, extravaſated blood was found, and the membranes of the brain inflamed to a high degree.——*Timæus* ſpeaks of a perſon, who made no complaint for nine days after receiving a wound upon his head; but, on the eleventh day, was ſeized with convulſions, and died on the twelfth.——*Doleus* relates the caſe of a *Hanoverian*, who was firſt ſeized with vomiting, then with a *delirium*, and ſoon after died convulſed, in conſequence of a contuſion apparently ſlight upon his head. ——*Bohnius* has a very extraordinary caſe of this kind.——Not long ago, I ſaw a young man, who went about his buſineſs three weeks after receiving a blow juſt above his ear, which ſtunned him at firſt; but there was no external appearance of contuſion. His firſt ſymptoms were giddineſs and pain, convulſions enſued, and art cou'd not ſave him. The *Dura mater*

From *Timæus.*

From *Doleus.*

From *Bohnius.*

An extraordinary caſe of the Author's own obſervation.

was

was inflamed, the veſſels, running in the plicatures of the *pia mater*, turgid, and ſome ruptured, as we diſcovered upon opening the head.——In *Stalpart Vander Wiel* we find a great collection of obſervations to this purpoſe, from the beſt Authors, wherein the patients ſuffered, ſome ſooner and ſome later.

Stalpart Vander Wiel to be conſulted.

If a wound is made by a blow with an obtuſe weapon, or by a fall againſt ſome hard body, it may prove much worſe in its conſequences, than when received by a cutting inſtrument; the external parts may ſuffer more, beſides the danger of a concuſſion of the brain.——It is not at all to be wondered at, when we conſider the nature of the parts, the connexion, dependance, and communication, between the external and internal, that the brain and its appendages ſhou'd ſuffer; and that violent ſymptoms or effects ſhou'd be produced, by ſuch cauſes, though they might not originally have had their power extended to the interiors of the head.

Contuſed wounds more dangerous than inciſed.

If the external orifice of the wound is ſmall, and the wound large in the ſubjacent

A bad kind of wound of the head whether inciſed or contuſed.

cent parts, it is the more dangerous; becauſe the matter confined there, becoming acrid and irritating by inteſtine motion, may inſinuate itſelf far about, producing deleterious ſymptoms, if not timely prevented by ample openings, as I have ſeen. ——Such wounds are then to be treated according to general rules.

Simple wounds of the head require rather more attention, and a little difference in the treatment of them.

A SIMPLE inciſed wound of the teguments of the head requires no other method of cure, than has been mentioned in reſpect to wounds in other parts; only we ſhou'd be more cautious in the regimen, keeping the air from the wound, and not dreſſing it with applications of a moiſt, oleaginous nature; which doctrine is agreeable to the opinion of the ableſt Surgeons, ancient and modern. *Hippocrates* ſays. "*Capitis vulnus nulla re ma-*
"*defaciendum* ——." In another place he ſays. "*Malum eſt, humidum in vulnere*
"*capitis carnem eſſe, et nimia uligine dif-*
"*fluentem*, ——."——It has been obſerved, that wounds of the head are cured with difficulty in *Italy*; probably owing to the Surgeons in that Country uſing

Hippocrates's authority to ſupport this doctrine.

oleaginous

oleaginous and relaxing applications; for *Marcus Aurelius Severinus* blames the *Neapolitan* Surgeons for uſing oil, in wounds of the head; commending the *Malteſe*, for mixing wine with it, to correct its relaxing quality; but even with this correction, it is not a proper application for theſe wounds. *Unguent. e Gum. Elemi*, with the addition of a little of the pureſt kind of turpentine, or natural balſam, is a good application, and it may be better to apply it upon a pledget over dry, even lint.

The authority of *Marcus Aurelius Severinus* upon the ſame occaſion.

If the temporal muſcles, or thoſe inſerted into the occipital bone, or the tendinous or nervous parts, are contuſed, as well as wounded, the worſt of ſymptoms are greatly to be feared; which ſhou'd be prevented, if poſſible, by early attention, or remedied by the treatment, directed in contuſed and lacerated wounds in other parts; though theſe are attended with a greater degree of danger, from their vicinity to the brain, &c. as we have juſt hinted.——In contuſed wounds, there may be extravaſations of blood, or in conſequence of inflammation, collections of purulent matter, that may form *ſinuſes*, which

The worſt of ſymptoms may ariſe from wounds of the muſcles, tendons, &c. of the head.

which require opening directly, to allow a free exit to the blood or matter, and to give convenient room for the application of proper medicines, by which the ill effects, that might otherwise follow, may be prevented, as may be seen in *Berengarius, Doleus, Muys, Scultetus, Wiseman, &c.*

Of the treatment, &c. of wounds of the *Pericranium*, &c.

When the *Pericranium*, or the expansions of the *tendons* suffer by wound or contusion, separately or conjunctly, the nervous system may be thrown into dreadful disorders; under which alarming circumstances, we must not hesitate a moment in making an ample incision, quite to the bone, taking care that the wound in the *Pericranium*, or tendinous expansion corresponds with that of the scalp in laying the bone bare, in order to free those sensible parts from that tension and inflammation whence the alarming symptoms arose.——*Mons. Pouteau*, Surgeon Major of the *Hôtel-Dieu* at *Lyons*, in his *Melanges de Chirurgie*, an excellent work, has two singular cases to this purpose.——The case of Prince *Charles* son of the

Histories to this purpose in *Pouteau.*

King

King of *Spain* was of the ſame nature; and which the great *Veſalius* treated with ſo much judgment, as to gain him immortal honor at the Court of *Madrid*.

See the life of *Veſalius* prefixed to his works, by the Editors *Boerhaave* and *Albinus*.

INJURIES of theſe kinds, upon the head, are frequently accompanied with inflammatory ſwellings to a great degree and extent, having ſometimes the appearance of an *Eryſipelas* and *Phlegmon* mixed together, and ſometimes they are alſo *emphyſematous*; on which account the general antiphlogiſtic method is to be obſerved.——*Garengeot*, in his treatiſe on the operations of Surgery, undertakes to lay down, what he calls, a certain ſign of knowing, whether the *Pericranium*, or only the other teguments, are concerned in theſe kinds of tumors; but it is fallacious, and by no means to be depended upon, as a *Criterion*. Indeed his manner of reaſoning, upon this point, rather tends to perplex, than elucidate and ſupport his argument.——An extraordinary tumor of this ſort I have mentioned in my Obſervations, attending a fiſſure on the *Os Frontis*.——And, many years ago, I was called to a man of an ad-

Various kinds of ſwellings often attend injuries of the head.

Garengeot's Criterion not to be relied on.

Hiſtory.

Hiſtory.

vanced age, the fourth day after his receiving a ſmall contuſed wound on his right temple. We cou'd not diſcover any injury done to the ſkull; his head and face were ſwelled in a prodigious manner, his eyes quite cloſed, and the tumor appeared complicated of the *Eryſipelas* and *Phlegmon*. Notwithſtanding our utmoſt endeavours the ſwelling increaſed; he grew delirious, then comatoſe, and died convulſed on the ſeventh day.——I was lately conſulted for a young man, on the fourth day after his having received a contuſed wound, by a fall, on the right ſide of his forehead. The Surgeon, who was immediately called to him, loſt no time in ſcalping, and treated the patient properly in all reſpects; he cou'd diſcover neither fracture nor fiſſure, but in two or three days, the whole head and neck were tumified, and emphyſematous to an enormous degree; the *Emphyſema* extending as far as the *Abdomen*, and below the ſhoulder-blades, as if blown up with a pipe. When I firſt ſaw him, his ſenſes were imperfect, ſoon after he became very delirious, and died in convulſions the next day.—— Leave cou'd not be obtained, in either of theſe

Hiſtory.

theſe caſes, to examine the heads of the patients after death; people in the Country generally having an abhorrence of ſuch uſeful inſpection and inquiry.

WHEN the *Pericranium* is only cut through, and the bone bare, without contuſion, or loſs of ſubſtance of this membrane, or injury done to the bone, even though the ſcalp is conſiderably ſeparated from it, we may bring the lips of the wound, as near together as we can; keeping them in proximity, by the dry, rather than by the other, future, with proper eaſy compreſs and bandage, as have already been deſcribed. *Berengarius*, *Wiſeman*, *Belloſte*, and other eminent practical Writers, recommend this kind of treatment, which I have ſeen attended with ſucceſs in many inſtances; and in two, where large flaps, leaving the bone bare a great ſpace, grew to it again, by being clapped down, before the air had made impreſſion upon the parts, to prevent their reunion.

A method that may be taken in recent inciſed wounds leaving the bone bare.

THE *Pericranium* being ſtrongly attached to the ſkull, by an infinite number of veſſels, when that membrane is taken away,

Methods to be taken in wounds of the *Pericranium* with loſs of its ſubſtance.

by any external force, the bone muſt ſuffer in proportion to the violence of the cauſe producing that effect; and then the acceſs of the air may prove farther detrimental to it, againſt which it ſhou'd be defended as much as poſſible. The firſt apparent change of color of the bone, under theſe circumſtances, is from a bluiſh white to a yellow, growing gradually darker, approaching to black. Nature will, ſooner or later, according to the depth that the ſubſtance of the bone is injured, ſeparate the dead parts from the living, by fleſh ſprouting from the ſubjacent veſſels; and once I had a very fair opportunity of diſcovering, even without the aſſiſtance of a glaſs, the vibrations of the new made arteries, upon the appearance of this kind of vegetation, coming through ſmall holes in the very thin ſcales of the ſcull, as they were caſting off, by that means. This operation of nature is called the exfoliation of the bone: after that impediment to healing is removed, the fleſh, proceeding from the extremities of the veſſels belonging to the bone, forms a net work, which, covering the bone, and uniting with the fleſh generated by the neighbouring

neighbouring parts, ſupplies the loſs of ſubſtance. This doctrine is agreeable to the univerſal conſent of Phyſiologiſts, and the moſt attentive Surgeons.

HENCE we ſee, that the denudation of the bone, under theſe circumſtances, protracts the cure of the wound; but in order to haſten it, and prevent ill accidents, from expoſing the *cranium* to the cold air, *Belloſte* propoſes dreſſing but ſeldom, after making many adjacent holes, with a drill or *perforator*, as far as the *meditullium*, whence fleſh, he ſays, will proceed and cover the bone, before the influence of the air can make exfoliation neceſſary to the cure; but from experience, I have found this method will not always ſucceed; the reaſons are obvious enough, when we conſider the veſſels of the bone may have received ſo much injury, by the fall or blow, as to deſtroy their vitality in ſuch a manner, that terebration cannot anſwer the propoſed end; and we may eaſily conceive, what muſt prove the conſequence of covering the bone over with fleſh in ſuch a ſtate.——— Concerning this practice, we ſhall ſay ſome-

Belloſte's method of treating uncovered bones.

His method not always to be depended on.

thing more, under the article of contuſion of the ſkull.——Formerly, Surgeons of the greateſt note, and among the reſt, *Wiſeman*, uſed to raſp or ſcrape the parts of the bone thus altered, and alſo in fiſſures.—— I have twice ſucceeded, beyond my expectation, by ſcraping firſt, and then making many ſmall holes in the *Cranium*, till the blood was ready to ſtart; and I have often greatly expedited the cure of ſome kinds of *caries* in the bones, in other parts, by the ſame management, having a variety of inſtruments, applicable to theſe purpoſes. (*a*)

Rugination formerly practiſed.

Of the ſucceſs of ſcraping and Terebration.

We are to endeavour all we can to prevent any great flux of matter, avoiding every thing that may corrupt the bone, as oleaginous applications, &c. Spirituous, warm, ſubtile medicines are to be uſed; we may recommend *Tinct. Myrrh. Tinct. Maſtich. Spirit. Terebinth. &c.* which preſerve the bone from corruption, and defend it againſt the influence of the air; the other parts of the wound may be dreſſed with dry

Method of dreſſing.

(*a*) Vid. Comment. *Van Swiet.* in *Aphoriſm. Boerhavii*, § 253.

dry lint, covered with a pledget of *Unguent. e Gum. Elemi, &c.* care being taken to ſuppreſs a luxuriance of fleſh, as mentioned in the treatment of wounds in general.——— Keeping the parts warm promotes the regeneration of fleſh, and conſequently the exfoliation of the bone. During the time of dreſſing, the ambient air may be warmed, if the ſeaſon of the year requires it, with a chafing diſh of coals.———Whether terebration, &c. are practiſed or not, this method of dreſſing is proper, and ſhou'd be performed as expeditiouſly as poſſible.——— Fungous fleſh is apt to grow from the lips of the wound, and lay looſe upon the bone, without great care in the dreſſing to prevent it, and which neglected might create much trouble, both to the patient and Surgeon, as I have ſeen more than once; and in one caſe, that I was concerned in, above ſix months after the accident, the cure was obſtructed, through inattention in this reſpect, not a little to the prejudice of the Surgeon's character.

Of the various injuries incident to the ſkull.

Of the formation of the *Cranium*.

We have now to conſider the different injuries the *Cranium* may ſuffer; firſt giving a ſhort account of its bones, &c. It is a kind of box or caſe of a *ſpheroidal* figure, containing and defending the brain, with its appendages, againſt external injuries, formed of eight bones; which are the *frontal*, two *parietal*, two *temporal*, the *occipital*, the *ſphenoid* and *ethmoid*, connected by the *coronal*, *ſagittal*, *lambdoidal*, *ſquamous*, and *tranverſe* ſutures; the *coronal* runs acroſs the ſkull, from the upper edges of the *ſphenoidal* bone, joining the *frontal* to the *parietal* bones: the *ſagittal* begins at the *frontal* bone, ends at the *occipital*, and joins the *parietal* bones; under which ſuture lies the longitudinal *ſinus*; and this ſuture is continued down to the noſe in children, dividing the *Os Frontis* in the middle. The *lambdoidal* ſuture connects the poſterior

posterior parts of the *parietal* bones to the *occipital* bone, and under this suture is the course of the lateral *sinuses*; and in this suture, are found more of the *Ossa triquetra*, or *Wormiana*, from *Wormius* the discoverer of them, than in any other. The *squamous* sutures are made by the superior parts of the *temporal*, and *sphenoidal* bones, lapping over the lower parts of the *parietal*. The *transverse* suture passes over the face, and runs through the bottoms of the orbits of the eyes, joining the lower edge of the *frontal*, to the *sphenoidal* bone. The bones of the skull have two tables, separated by a *meditullium*, but this *diploë* is often wanting, as well as the sutures obliterated, in old subjects; there are also holes, convexities, projections, &c. to be remarked, by an examination of the skeleton, in order to prevent falling into mistakes.

Kinds of injuries the skull is liable to.

The best Authors, ancient and modern, divide the injuries, of which the skull is susceptible, into five kinds, as a *fissure*, a *fracture*, a *contusion*, a *depression*, and a *cut*; but before we treat of these injuries, it is proper to direct the methods necessary

to

to be taken, in order to diſcover the nature of them, when they do not evidently appear, after being aſſured, that the patient has received a hurt by a blow or fall upon his head, though we cannot preciſely determine the place, where the hurt is. The way to come at the knowledge of it is, as *Hippocrates* directs, *de capitis vulneribus*, by examining the nature of the weapon, with the manner that the patient received the ſtroke or fall, and the length of the wound is to be conſidered; for a very long wound cannot be inflicted upon the head, without manifeſt hazard of injuring the ſkull, as has been remarked, on account of its *ſpheroidal* figure; and we muſt alſo remember, the difference of thickneſs in the different parts of the ſkull, as well as their natural convexities and projections; but there is ſuch a variation in ſkulls, that with the utmoſt attention, we may ſometimes be deceived. In exploration with the probe, we muſt not forget the *ſinuoſities*, the *inequalities*, *ſutures*, &c. leſt the rough and unequal ſurface of the ſkull deceive and lead us into ſome ſuch error as that mentioned

Conſiderations and directions concerning diſcovering injuries done to the ſkull.

of

of *Hippocrates*.——This great man, and other eminent Authors ſince his time, adviſe giving the patient ſome hard ſubſtance to chew, as a cruſt of bread; or to put a ſtring between his teeth, pulling it with a ſudden jerk, which, they ſay, will give a ſenſation of pain in the injured part of the ſkull; but theſe experiments are by no means to be depended on; they can have no effect, except in thoſe parts, where the *temporal* muſcle is attached, as *Berengarius* well obſerves; who alſo tells us, that ſome people, particularly *Lanfranc*, pretended to make the diſcovery, as is commonly done in earthen ware to find if they have a flaw, by ſtriking the ſkull with ſome ſmall ſolid body; but this experiment is equally fallacious and ridiculous as the other. Feeling with our fingers will ſometimes ſerve us, though not always; when therefore we are called to a patient, whoſe ſkull we have reaſon to fear, from the ſymptoms, has ſuffered an injury, if there are no viſible ſigns to direct us to any particular part, we are to examine ſtrictly, with our fingers, in every part, the head being firſt well ſhaved, in order

order to diſcover any inequalities, or yielding of the bone, or puffy ſoftneſs of the teguments, attended with ſome ſenſe of pain upon preſſure, which may guide us to the injured part of the bone: and the patient, though he may not be perfect in his ſenſes, ſtill may give us ſome light into this obſcure matter, by clapping his hand to the part, where he feels pain.

The ſkull is to be laid bare when we have good reaſon to ſuſpect its being injured.

When we have diſcovered a ſuſpicious part, with ſymptoms of a fracture or fiſſure, it ſhou'd be opened to the bone directly, in order to prevent the worſt of conſequences, of which we have innumerable inſtances, proceeding from delay; as we may find in *Schenkius*, and other obſervators, and ſome ſuch I have obſerved.

The different manners of opening the parts in injuries of the ſkull.

We ſhall here curſorily take notice of the different manners of opening the parts, as the means of inquiry, neceſſary in all the injuries happening to the ſkull; deferring the reſt till we come to particular caſes, becauſe all of them have ſomething peculiar to be attended to. Laying the bone bare, or ſcalping, is done by cutting the ſcalp with a ſtrong knife, appropriated

to

this uſe, and called a ſcalping knife, lately much improved. Writers upon this ſubject have directed the inciſion to be made in different directions and figures; as the *rectilineal*, the *angular*, that in form of a T, and the *crucial*; the firſt is proper, when we want to purſue a fiſſure; the other are ſeldom found uſeful; for when we have in view the making room for the application of the *trepan*, or *trephine*, it is better to remove a circular or oval piece of the ſcalp. That great Surgeon *Monſ. Arnaud* ſays, he made the crucial inciſion, with ſucceſs, upon the *temporal* muſcle, contrary to the opinion of other Surgeons; and I have twice ſucceſsfully removed a conſiderable portion of it, to make room for perforating the ſkull, without leaving any impediment in the action of that muſcle. ——In making the inciſion, care ſhou'd be taken to cut through the teguments and *pericranium* equally, and at once, uſing the edge of the knife more than the point, eſpecially if we have reaſon to think the *cranium* is much broken and yielding; becauſe if we plunged down the point, bearing hard upon

upon it, we ſhou'd, by that incautious ſtep, be apt to depreſs the ſkull more, or perhaps injure the ſubjacent parts, by its ſlipping between the fragments. After having completed the inciſion in this manner, and raiſed the *pericranium* a little from the bone, quite round, with the knife, the *ſcalprum* will be found the propereſt inſtrument to clear the bone, as we ſhall more particularly mention, when we come to deſcribe the application of the trepan.

Of Fiſſures.

Of the *Counter-Fiſſure*, and its various kinds.

We ſhall firſt take under conſideration the *Counter-Fiſſure*, with its ſeveral ſorts. 1. Where the blow is on one ſide of the head, and the ſkull cracked on the other. 2. Where the internal table is broke, the external remaining ſound. 3. Where the ſtroke is received on one bone, and the fiſſure in that adjoining.

A GREAT many Authors have doubted of the exiſtence of a *Counter-Fiſſure*; and indeed it is a difficult taſk to account ſatisfactorily for ſuch an effect, eſpecially in the two firſt kinds. It wou'd be only waſting time, to dwell upon the vague opinions, that have prevailed in different ages, concerning the violent agitation the animal ſpirits are put into from a conſiderable blow on the head, and the ſtrong impulſe they conſequently make againſt the *cranium*; or to conſider the compariſon that has been made between the ſkull and an empty bottle, which ſtruck on one ſide will ſometimes crack on the other; or to debate the queſtion about the ſubtile *Aura*, ſaid, by curious, ſpeculative men, to be contained between the tables, that, upon a ſudden ſhock or blow, may expand, and break the internal table, and not the external; we ſhall therefore only produce ſuch teſtimonies of the facts, as put the matter as much beyond controverſy, as the nature of the ſubject admits of, leaving the curious to reaſon upon this abſtruſe point as they pleaſe. We ſhall not implicitly rely upon the authority of *Hippocrates*, *Galen*, *Celſus*, and

Doubts about *Counter-Fiſſures.*

and other Fathers of our art, though they mention the fact, and merit a great degree of confidence, as they ſeldom aſſerted any thing without having it confirmed to them by ocular demonſtration; but we ſhall refer to thoſe Authors only, who relate what they were eye-witneſſes of.——*Berengarius* ſays, he has ſeen three caſes, where the *Fiſſures* were oppoſite to the parts which received the blows.——*Nicolaus Florentinus* affirms his having ſeen a fracture, with a great collection of matter, on the contrary ſide to that which received the blow.——*Fallopius* ſays, that he has ſeen inſtances of this nature.——*Leſſius* relates an example in a perſon, who received a wound upon his forehead, by a fall from his horſe, and that after his death, a *fiſſure* was diſcovered in the *occipital* bone, with extravaſated blood under it, without the leaſt appearance of external injury on that part.——*Meek'ren* gives a ſingular inſtance of a perſon, who had only a contuſion on the ſide, where he was ſtruck, and two *fiſſures* on the oppoſite.——We might add the teſtimonies of *Paré, Tentanus, Dionis, Garengeot, Mery, Petit, Arnaud* and *Peyronie*, upon this occaſion.

Berengarius and other authorities to prove the exiſtence of the firſt ſpecies of *Counter-Fiſſure.*

Nicolaus Florentinus.

Fallopius.

Leſſius.

Meek'ren.

Other authorities that might be adduced in ſupport of theſe facts.

Tulpius

Evidences of the second ſpecies of the *Counter-Fiſſure.*

Tulpius mentions a very memorable example of a *Fiſſure* in the internal table, cauſed by a ball, the external not being injured.——*Sculletus* relates two caſes, in which the internal table ſuffered, the external remaining unhurt.——*Paré* gives us the hiſtory of a Nobleman's caſe, in which the internal table of the ſkull was fractured by a Ball, though the head was well guarded with a helmet, and the external had ſuffered no manifeſt injury——*Paaw* in his Commentaries upon *Hippocrates, de Capitis Vuneribus*, aſſures us, he opened the head of a young man, who died three days after an accident, by a fall out of a cart, and found the external table ſound, with a ſeparation of a large portion of the internal.——*Petrus Spererius* ſays, that *Rinaldus Corteſius* had a ſkull in his ſtudy, in which the lower table was fractured, the upper remaining ſound.

Tulpius.

Sculletus.

Paré.

Paaw.

Petrus Spererius.

Witneſſes of the third kind of *Counter-Fiſſure.*

Paaw, in the above recited place, relates the caſe of a perſon, who was ſtruck on the left *parietal* bone, near the *ſuture*, and, by that percuſſion, had the right fractured.—*Berengarius* mentions a ſimilar Accident.—

Paaw.

Berengarius.

Ruyſch. *Ruyſch* has obſerved the ſame in a very remarkable manner.

FROM theſe convincing Authorities, which I think cannot leave the incredulous in doubt, it may reaſonably be concluded, not to mention any thing of my own remarks, that the various kinds of *Counter-Fiſſure* may happen, and the effect of a violent percuſſion be communicated from one part of the head to another.—— In all our inquiries and inveſtigations, it is eſſentially neceſſary, to keep our minds as free as poſſible from prejudices, and not implicitly yield our aſſent to the doctrine or opinion of others, unleſs ſupported by matter of fact, and rational experience, in order to acquire true practical knowledge.

Of the *Fiſſure* that commonly happens.

HAVING conſidered the *Counter-Fiſſure* we ſhall proceed directly to that kind, which more frequently occurs. When the *Fiſſure* is large, it is ſoon diſcovered, after the bone is laid ſufficiently bare, and

How to diſcover a *Capillary Fiſſure.*

the blood well ſpunged up; but a *Capillary Fiſſure* requires great attention to diſcover it

Vid. *Wagner de Contra-Fiſſura, & Le Maire de Reſonitu.*

it. The Method, propoſed by *Celſus* and others, for this Diſcovery, is to pour ink, or ſome other coloured liquor, upon the ſuſpected part of the bone, and then to wipe it dry with a ſpunge; when ſome of it will have inſinuated itſelf into the crack, not to be expunged, or even obliterated by a little ſcraping of the bone; which indeed may ſerve to ſhew the *Fiſſure* ſtill plainer.

Berengarius's Method of diſcovering whether the *Fiſſure* penetrates both tables of the ſkull.

In order to know whether the *Fiſſure* penetrates both tables of the ſkull, *Berengarius* propoſes, in his treatiſe *de Fractura Cranii*, that the patient ſhould hold his breath, having his mouth and noſtrils cloſed, driving, as he expreſſes it, the air with the utmoſt force from his breaſt to his head, and ſays, that if the *Fiſſure* penetrates both the tables, moiſture will appear through the crack; but this experiment is not to be depended upon, tho' ſo great an authority may be added, as that of *Fabricius ab Aquapendente*. *Guido*, *&c.* have propoſed other means, which are equally fallible.

Fiſſures frequently attended with worſe conſequences than *Fractures*.

SINCE *Fiſſures* are ſo difficult to diſcover, and the paſſage too narrow for the egreſs of extravaſated blood, &c. they frequently produce worſe effects than fractures; and in them, a concuſſion of the brain is more to be apprehended, than in large fractures, for obvious reaſons. Theſe Conſiderations demand the moſt diligent and judicious inquiry at the very firſt, in order to obviate future evils. The inſtance which *Paaw* gives in his Commentaries upon *Hippocrates de Capitis Vulneribus*, is very ſtriking, of a perſon, who ten months after having received a *Fiſſure*, which had paſſed unobſerved, was ſeized with a *Vertigo*, and died in a ſhort time. In this caſe, after the patient's death, the bone was found carious and the brain corrupted.

Hiſtory of a caſe from *Paaw* to encourage trepanning early.

Trepanning in *Fiſſures*, to be practiſed without delay, not relying upon other methods.

HENCE appear the ſad conſequences of delaying to perforate the bone, by the trepan; and, as that Operation is attended with little or no pain or danger, we ſhould not from the preſent abſence of threatening ſymptoms, by any means be deluded to procraſtinate, nor, I think, be induced by any authority to truſt to other methods,

not

not even to *Belloſte*'s favourite one of making terebrations to the *Diploë* under a perſuaſion that the *Fiſſure* penetrates no farther, a caſe which I believe rarely happens; but ſhou'd it not proceed through both tables of the ſkull, yet the *Dura Mater* may probably have ſuffered under that very part, laying the foundation of future miſchief: and in the caſe juſt mentioned early trepanning probably would have ſaved the patient. The happy event in ſome caſes without the operation, may have had too much weight with the timid and unexperienced.

Of a *Fracture* of the ſkull.

A *Fracture* is the ſecond kind of injury of the ſkull; the definition of which differs from that of a *Fiſſure*, which is no more than a ſimple ſolution of continuity of the bone, whereas by a *Fracture* is underſtood a ſeparation of one or more pieces from it. This accident requires immediate trepanning, as the fragments of the bone irritating and injuring the *Dura Mater*, may be ſoon productive of irreparable miſchief, as I have often obſerved; unleſs they can be removed by ſome other method

Under what circumſtances trepanning may be reaſonably omitted.

without detriment to the ſubjacent parts.

First kind of *Fracture* of the ſkull.

A *Fracture* of the ſkull is divided into three kinds. 1. That, in which one or more pieces are entirely ſeparated, and not much depreſſed. 2. That, where the fragment or fragments lie wholly or partly under the ſound bone, which is the worſt caſe that can happen, on account of the difficulty of extracting or elevating them. 3. Is when the piece rides upon the ſound part of the bone; which is a bad circumſtance, as its lower part may ſink down, penetrating the meninges and brain itſelf.

Second kind.

Third Kind.

Treatment after removing the fragments.

THE application proper, after removing the fragments of the bone by trepanning or otherwiſe, as the exigency of the Caſe demands, are ſuch as the membranes, the bone and the ſcalp require reſpectively, which will be ſpecified after the operation of trepanning.

Of a *Contuſion* of the ſkull.

THE third kind of injury, which we have in order mentioned, is a *Contuſion* of the ſkull. It may be occaſioned by a fall, by ſtriking the head againſt ſome ſolid body,

by

by ſome heavy weight falling upon the head, or by a blow with an obtuſe weapon. By ſuch violence, the veſſels belonging to the bone may be injured, and the courſe of their fluids obſtructed, whence may ariſe worſe conſequences, than from *Contuſions* of the ſoft parts; for if not diſcovered, and the bone laid bare in time, it may grow carious, and produce moſt dreadful ſymptoms.——*Schenkius* ſpeaks of a Gentleman, who received a wound on his head by a bullet, which was ſoon healed, but after that he was afflicted with a perpetual head-ach, for many years; on which account, various methods were tried, but in vain; at length the *cicatrix* opened of its own accord, and the bone was found carious; upon the ſeparation of the affected from the ſound part, the patient perfectly recovered, without any pain of his head remaining.——The ſame external injuries may extend their effects farther; the veſſels, connecting the *Dura Mater* to the *Cranium*, may be ruptured, cauſing a ſeparation of theſe parts; whence extravaſations of blood, inflammation, ſuppuration

Hiſtory from *Schenkius* to this purpoſe.

Motives for trepanning.

tion, and ulceration upon that membrane, may enſue; under which circumſtances, nothing but trepanning can bring relief (*a*).

Of *Depreſſion* of the ſkull.

THE fourth ſort of Hurt the ſkull may receive is a *Depreſſion*, and from the ſame cauſe as a *Contuſion*. Some Surgeons deny the fact peremptorily, except in young ſubjects, in two of which I have ſeen it, in a very remarkable manner, but never in an adult, without a fracture; yet I can conceive ſome ſkulls may admit of it, and ſeveral Authors of the beſt credit confirm it, as we may ſee in a collection of examples in

The Skulls of ſome adults may be in ſuch an infirm State as to admit of it, 'tho' very rarely.

(*a*) Doctor *Van Eems* in *Prælect. academic. Leydens.* ſpeaking of the veſſels of the *Dura Mater* which attach it to the ſkull, ſays:

"Nunquam neglexi occaſionem hanc rem accura-
"tius inquirendi, & Noſocomium publicum hanc op-
"portunitatem mihi dedit. Juvenis & robuſta puella
"moriebatur vera phrenitide, ejuſque Cadaver coram
"auditoribus, paucis poſt mortem horis, aperui.
"Quando olla cranii erat ablata a ſubjecta Dura Ma-
"tre, in tota ejus ſuperficie, qua cranium ſpectat, non
"inveni ullum punctum, microſcopio diſtinguendum,
"ubi non erat guttula ſanguinis rubri, & cava olla
"cranii ablata, etiam non exhibebat ullum punctum,
"quod non oſtendebat talem guttulam ſanguinis re-
"ſpondentem guttulæ, in ſuperficie Duræ Matris viſi-
"bili."

in *Stalpart Vander Wiel.*——*Hildanus* relates the caſe of a ſmart boy, who became ſtupid by ſuch an accident, gradually loſing his memory and intellectual faculties.

Hiſtory from *Hildanus.*

The Patient is liable to all the ſymptoms under this accident that attend a *Contuſion* of the ſkull; and worſe may more immediately enſue, by compreſſion, as the ſkull is completely filled with the *Encephalon.*

The ſame or worſe ſymptoms may proceed from a *Depreſſion* than a *Contuſion* of the Skull.

The Ancients recommended various methods of raiſing the depreſſed parts of the ſkull. The uſe of *Cupping Glaſſes* has been adviſed by ſome, and among them, the great Practitioner *Hildanus:* Others, have directed the application of an adheſive plaſter, having a ſtring affixed to it, to pull it up with; but theſe methods are inſignificant. It is much more probable, that forcibly pulling up the ſcalp ſhould ſeparate it from the *Perecranium*, than raiſe the depreſſion of the bone. *Paaw*'s method is too irrational, to take any particular notice of it, and that, recommended by ſome Writers, with a ſcrew fixed into

Methods of the Ancients to elevate a *Depreſſion* very frivolous.

to the depreſſed part of the ſkull, in order to elevate it, is liable to many objections, that can want no explanation. It is very aſtoniſhing, that ſuch great Maſters ſhould fall into ſuch groſs abſurdities; but according to *Scultetus* and others, it is better to leave the work to nature, than practiſe any of theſe methods, which are exploded by the Moderns: But when the functions of the brain are hurt, by a depreſſion of the ſkull in children or adults, trepanning is adviſeable, making as many perforations as ſhall be found neceſſary, to give an opportunity of purſuing ſuch other meaſures, as the urgency and circumſtances of the caſe may require, as will be hereafter directed in the article of trepanning.

Scultetus and ſome other great Surgeons diſapprove all thoſe Methods, as well as the Moderns.

When the Symptoms are threatening in a *Depreſſion* of the Skull, even without a *Fracture*, trepanning not to be neglected.

Of the *Cut* which is the fifth and laſt kind of injury of the Skull, and is divided into three ſorts.

The perpendicular *Cut*.

THE fifth kind of injury, that the ſkull may ſuffer is a *Cut*; which may properly be divided into three ſorts. 1. The perpendicular. 2. The oblique. 3. Exciſion, or that which carries off a piece of the bone with the teguments.——The perpendicular *Cut* differs but little from a *Fiſſure*; it is eaſier diſcovered, and not attended with ſuch contuſion of the teguments

ments and bone; conſequently is generally leſs dangerous.——The oblique is worſe than the perpendicular, as blood or matter may be apt to lodge under the ſloping wound; but on the other hand, there is leſs hazard of having the *encephalon* wounded.——Exciſion, if it penetrates no farther than the *Diploë*, is rather leſs dangerous than either of the other, and it is to be treated as a wound with loſs of ſubſtance. Where the ſcalp is not totally ſeparated, having the piece of the bone adhering to it, ſome Surgeons have propoſed and adviſed, diſſecting that off, clapping down the ſcalp over the ſound part of the bone, and keeping them in contact by eaſy compreſs and bandage.—*Stalpart Vander Wiel* has collected precedents from Writers of good credit, to encourage the practice; and mentions ſome, even where both tables of the ſkull have been hewed off, that have ended happily by this treatment, without any exfoliation.——*Berengarius* relates the caſe of a Gentleman, who was wounded in the forehead, ſo that the ſcalp, with a piece of the bone affixed to it, hung down over

The oblique cut.

Exciſion, or what is termed by ſome Writers, *Dedolation*.

A collection of caſes to this purpoſe in *Stalpart Vander Wiel*.

Hiſtory from *Berengarius*.

over his eye; this experienced Surgeon ſeparated the piece of bone from the ſcalp, proceeded as we have mentioned, and cured his patient in a ſhort time. (*a*)——

Hiſtories from *Fallopius*, *Largelata*, and *Paré*.

Fallopius gives a ſimilar caſe.——*Petrus e Largelata* aſſures us, he has taken ſuch meaſures with ſucceſs.——*Paré* ſpeaks of an extraordinary caſe of this kind, ſucceſsfully treated by him in the ſame manner.——*Belloſte* in his Hoſpital-Surgeon, has a moſt dreadful caſe which terminated very happily, of a girl between 11 and 12 years old, who had received 18 or 19 wounds upon her head, with a cutlaſs, comprehending every ſpecies of wound here mentioned.

A dreadful example from *Belloſte*.

All

(*a*) *Job a Meck'ren* has introduced, among his chirurgical obſervations, a ſtrange ſtory of a *Ruſſian* Nobleman, who had ſuch a defect ſupplied, by a Surgeon, from a dog's head; but the bigotted Divines of that Country excommunicated him, and wou'd not annul the ſentence, till he ſubmitted to have the brutal part of him removed.

There is, I think, in the *Philoſ. Tranſ.* an account of a ſingular operation, performed by a Surgeon, who after diſſecting off a cock's ſpur, with as much fleſh upon it as he cou'd, ingrafted it into an inciſion made upon his comb on the top of his head, where it firmly grew.

ALL theſe wounds require the ſame treatment, we have already directed; but it certainly wou'd be in vain, to attempt the method of cure, which has been recommended to the conſideration of Surgeons in the third ſpecies, or *Exciſion*, except in recent caſes. (*a*)

A

(*a*) Profeſſor *Monro* ſpeaks of a perſon, who in an engagement with a privateer, received a wound upon the middle of the *Os Frontis*; which, though it was ſoon healed, yet left a continual pain upon the part. Some time after his return home the wound broke open, upon which incident the pain abated, but a deep and extenſive *caries* was found in the bone by the Profeſſor, to whom he applied after having been under the care of other Surgeons to no purpoſe. The carious bone was not black, but of an aſh-color, and full of ſmall, like worm-eaten, holes, and the diſcharge was large, ichorous and very fœtid. This Practitioner of great diſcernment, was apprehenſive that the *caries* penetrated at leaſt as far as the *Diploë*, if not quite thro' the bone. From this conſideration he reſolved to apply the trepan, and make ſuch a number of perforations as were neceſſary to encompaſs the carious part of the bone, and found it affected to the *Diplöe* about the breadth of the palm of his hand, which he eaſily raiſed from thence, except in one ſmall ſpace where he left it to exfoliate; and cured his patient after this operation by the common treatment.

History from Profeſſor *Monro*.

A ſhort deſcription of the material parts of the *Encephalon*.

Deſcription of the *Encephalon*.

THERE is an intercourſe between the *Pericranium*, *Meditullium* and *Dura Mater*. The *Dura Mater* is an inelaſtic membrane, about the thickneſs of parchment, lining the internal ſurface of the ſkull, as the *Pericranium* encompaſſes the external, to which it is attached by a greater number of veſſels, and more ſtrongly, in children, than in adults, giving a covering to every nerve in its paſſage out of the ſkull. The *falci-form* proceſs of the *Dura Mater*, running according to the courſe of the *ſagittal* ſuture, and longitudinal *ſinus*, divides the brain into the two hemiſpheres; and the tranſverſe proceſs is in the courſe of the *lambdoidal* ſuture and lateral *ſinuſes*, ſeparating the *Cerebrum* from the *Cerebellum*; which proceſſes, forming a kind of triangle, ſerve to prevent a vacillation of the brain, being aſſiſted by the entrance of

of the veſſels of the *Dura Mater* into the ſkull, as deſcribed.——The *Pia Mater* is one of the moſt delicate vaſcular membranes, immediately inveſting the brain, in all its convolutions or plicatures; it is ſo fine and tranſparent, that the brain appears clearly through it; its external ſurface is connected to the *Dura Mater* by veins, opening into the *ſinuſes*; its internal is attached to the brain by *capillary* veſſels, called *vaſa tomentoſa*.——The brain is compoſed of a cortical, and medullary part; the firſt is of a browniſh, or rather cineritious colour; the other white, and of a firmer texture; both ſubſtances are vaſcular, but the cortical more ſo than the medullary from whence the nerves proceed.——The *Cerebellum* lies below the poſterior lobes of the *Cerebrum*; it has no convolutions, like the brain, but it has curved parallel lines, deſcribed upon its ſurface by the *Pia Mater*, and is of a darker colour than the *Cerebrum*.——Under the *Cerebellum* lies the *Medulla oblongata*, improperly ſo called, for it is rather of a depreſſed pyriform figure. This part is formed by the union of the *medullary* ſubſtance

ſubſtance of the *Cerebrum* and *Cerebellum*; whence proceeds the *Medulla ſpinalis*, which is alſo to be conſidered, as a continuation of the brain, with its 30 pair of nerves divaricating from it: and from this connexion of the nervous ſyſtem, we may account for many appearances, though not in ſo ſatisfactory a manner as we wiſh. (*a*)

Of the injuries which the *Encephalon*, or parts contained within the ſkull, may ſuffer.

Injuries to which the *Encephalon* are liable.

THE *Encephalon* may ſuffer. 1. By concuſſion. 2. By compreſſion. 3. By irritation. 4, By being wounded with cutting inſtruments, or fragments of bones. 5. By ruptures of veins, arteries, or lymphatics, proceeding from concuſſion, or ſome other cauſe,

(*a*) Read the late Profeſſor *Whytt's* excellent Book concerning the ſympathy of the nerves and nervous diſorders: And what Doctor *Hales* has ſaid in his Statical Eſſays vol. 2. Pag. 59 and 60; which kind of nervous ſympathy I have lately experienced, in an illneſs, to a great degree.

cauſe, and occaſioning extravaſations upon the meninges of the brain. The coats of the veſſels, which are ramefied in, and upon the plicatures of the *pia Mater*, connecting it to the *Dura Mater*, are very weak and tender; conſequently eaſily ruptured by concuſſion. 6. By inflammation; whence may proceed abſceſſes, or collections of matter. Though pure blood extravaſated, never changes into purulent matter, yet it is apt, after coagulation, to be rendered fluid by inteſtine motion and putrefaction; becoming then ſo acrimonious and ſtimulating, as to produce in the parts, where it is lodged, an inflammation; in conſequence of which, *pus* may be formed and mixed with it, which appearance, probably has deceived inattentive Surgeons, into an opinion, that blood is tranſmutable into *pus*. 7. By a detachment of the *Dura Mater*; whence may proceed extravaſation, inflammation, and an ulcerous foulneſs, or ſloughing of that membrane, proving of the moſt dangerous conſequence, as we have remarked under the article of contuſion of the ſkull. (*a*)

(*a*) See Mr. *Pott's* judicious practical treatiſe on this ſubject.

Various effects resulting from the preceding causes.

THIS variety of causes will be productive of a great variety of symptoms or effects, sooner or later; as bleeding at the nose and ears, head-ach, restlessness, inflammation of the eyes, fever, vertigo, stupor, loss of senses, as seeing, hearing, &c. deprivation of speech, and voluntary motion, difficulty of respiration, coma, palsy, involuntary emission of fœces and urine, apoplexy, and convulsions; and then death soon closes the dismal scene, unless nature can be assisted by art.

Some of these preceding symptoms accompany every injury of the *Encephalon*.

SOME of these symptoms attend every injury done to the *Encephalon*, sooner or later, more or less, according to the degree of obstruction to the circulation, inflammation, oppression of the brain, &c. ——Pain and heat of the head, with redness and wildness of the eyes and looks, attended with fever and a tense pulse, denote an inflammation upon some part of the *Encephalon*, which frequently in a short time terminates in delirium or phrensy: and when matter is forming, in consequence of inflammation, the patient is commonly subject to rigors.——When the

the brain is oppreſſed by extravaſation or otherwiſe, the nerves are affected, the pulſe generally becomes depreſſed and irregular, and other ſymptoms ſupervene, to a degree in proportion to that oppreſſion, &c.

Great prudence required in giving opinion in a doubtful matter.

FROM theſe conſiderations we muſt infer, that the aſſemblage of ſymptoms will generally be of a mixt nature; and the Surgeon muſt pay the utmoſt attention to them, to avoid falling into error of judgment, in declaring his ſentiments in ſuch a doubtful matter, which will not admit of a preciſe determination.

Of concuſſion of the brain ſimply.

How far a concuſſion of the brain, affecting the origin of the nerves, without any other evident cauſe, may excite diſorders in the nervous ſyſtem, &c. is too abſtruſe a point for us to attempt to elucidate. (*a*)——A concuſſion of the brain may happen, without the head being the part immediately ſhocked; of which we have inſtances; and the like I once ſaw.

A concuſſion may happen without the head being the part firſt ſhocked.

(*a*) Vid. *Bohnium* in *Renunciatione Vulnerum*, *de Vibratione Cerebri* Pag. 172: *Et Berengarium de Commotione Cerebri.*

We have alſo the fatal effects of concuſſions demonſtrated to us by diſſections, where only the blood-veſſels have been found turgid, without any rupture of them. A very remarkable caſe of this kind I had an opportunity of obſerving, ſome years ago, by opening the head of a boy, who had received a fall a week before, and who from the time of the accident, till the day before his death, was almoſt inceſſantly ſinging. Upon the ſtricteſt examination, I cou'd diſcover no extravaſation or ruptured veſſels, but thoſe diſtributed in the folds of the *pia Mater* appeared very turgid. When this fatal accident happened, the boy was learning pſalmody; and it was obſerved by thoſe who attended him on this occaſion, that his voice was more melodious after than before it, and that he ſung the tunes as truly. The day before he died he grew comatoſe, and expired in ſtrong convulſions upon the ſeventh day after the accident.

A ſingular caſe.

Hippocrates, and other ancient Writers, as well as the Moderns, have obſerved, that when a paralytic diſorder ſeized a perſon, in conſequence of an injury done to

Hippocrates and other Writers both ancient and modern, have taken notice of the oppoſite ſide to that injured becoming paralytic, &c.

to the brain, it was generally on the oppoſite ſide to that which received the blow. It has alſo been obſerved, that ſometimes the other ſide has been convulſed at the ſame time; as indeed I lately ſaw, in a very ſingular caſe, where the breech-pin of a gun, near three inches long, was lodged out of ſight in the left hemiſphere of the brain. (*a*)——*Bonetus*, *Hildanus*, *Valſalva* and others, mention caſes in which extravaſations were found, upon opening the heads of patients, who had paralytic ſymptoms of their limbs on the oppoſite ſides. The moſt eminent Writers and accurate Obſervers agree, that it more frequently happen thus; were it invariably ſo, the remark wou'd, on ſome occaſions, be a conſiderable direction to our judgment and practice.——Some ſpeculative men have attempted to account for this appearance by admitting a decuſſation of the nerves, (*a*) and aſſigned reaſons for

(*a*) See this caſe in the ſecond Edit. of my Caſes and Remarks in Surgery.

(*a*) *Caſſius*, a man of great note, one of *Aſclepiades's* Pupils and his Succeſſor, was of this opinion; but modern Anatomiſts do not allow a decuſſation of the nerves.

the injured ſide being thrown into convulſions at the ſame time: but let us leave theſe controverted, knotty points, to be diſcuſſed by the curious inveſtigators.

Great difficulty ſometimes to diſcover the nature of the complaint, or the part affected.

As the parts within the ſkull affected with inflammation, extravaſation, &c. or where there is a *fiſſure* without appearance of external injury upon the ſcalp, are ſo difficult to diſcover, we muſt, under ſuch perplexity, deliberately conſider the ſymptoms, and how the accident happened, with every circumſtance, that can poſſibly throw any light upon a matter of the utmoſt importance for the preſervation of the patient's life. Sometimes, though the patient's ſenſes are much impaired, as we have mentioned, he lifts his hand to the part affected; at other times, they are entirely taken away and we are deprived of that aſſiſtance, to direct our judgment. Here we want the greateſt ſagacity; for not being able to find out preciſely the ſituation of the diſorder, it generally proves mortal.

Hippocrates

Hippocrates relates an extraordinary case to this purpose, of a girl, who, by one of her play-fellows, was struck with the hand upon the *sinciput*, and became immediately blind; soon after, she was seized with a violent fever, accompanied with a pain of her head, and an inflammation of her face and eyes; on the seventh day, a considerable quantity of a bloody fluid issued from one of her ears; on the eighth, she grew lethargic, and died on the ninth.——*Hildanus* has a case something like this.——*Heurnius*, in his Commentaries upon *Hippocrates*, says, he has known some persons lose their taste and smelling all their lives, in consequence of falling upon the *occiput*: and there are many instances upon record, well authenticated, where the speech has been affected for a long time by concussions of the brain.——*Valleriola* tells us of a boy, who was struck on the head with a small stick, without any symptoms of fracture, or *fissure* immediately ensuing, or any appearance of contusion upon the scalp; but on the sixth day it inflamed, and then the patient was attacked with a palsy and convulsions,

Extraordinary case from *Hippocrates*.

A like case from *Hildanus*. History from *Heurnius*.

From *Valleriola*.

vulſions, becoming delirious ſoon after, and died on the eleventh day.——The ſame Author mentions the caſe of a vintner, who was ſtruck with a ſtone on his head, without apparently injuring the ſkull, yet on the fourteenth day he died; and upon opening his head, an extravaſation of blood was found upon the *Dura Mater*.——(*a*) *Bohnius* and (*b*) *Bonetus* have many ſingular caſes.——The great Profeſſor *Monro* inſtances the caſe of a painter at *Edinburgh*, who received a blow with a ſtone on the back part of his head, making a ſmall wound in the ſcalp. He refuſed to be let blood immediately after the accident, and walked near a mile to town; was then blooded freely, and properly treated in all reſpects; yet, within a few days, he was ſeized with a lethargy, and other uſual ſymptoms of an oppreſſed brain, and expired ſoon after. Upon opening his ſkull, neither fracture nor fiſſure

From the ſame Author.

Similar caſe in *Bohnius* and *Bonetus*.

Hiſtory from Profeſſor *Monro*.

(*a*) *De capitis vulneribus lethalibus in renunciatione vulnerum.*

(*b*) *In Anatomia practica.*

fiſſure appeared; nothing more was viſible, than a ſmall extravaſation of blood, with a turgeſcence of the veſſels.

HENCE we ſee, that in conſequence of ſeemingly ſlight cauſes, the *Encephalon* may ſuffer to a fatal degree: and under the circumſtances we have been relating, the intentions are, to cure the inflammation, remove the compreſſive cauſe, whatever it is, &c. On account of the inflammation, attending a fracture or fiſſure of the ſkull, &c. we muſt pay a due regard to the antiphlogiſtic method, veneſection in particular, and prevent, all we poſſibly can, the falling of blood upon the *Dura Mater*, &c. and if that has already happened, we muſt then endeavour to evacuate it ſpeedily; for by its ſtagnation, it ſoon becomes putrid and acrid, corroding the membranes, &c. the diſmal conſequences of which, we may read in *Schenkius*, *Tulpius*, *Wiſeman*, *Meek'ren*, *Vander Wiel*, *Hildanus* and other Obſervators, and in the *Acta Eruditorum Lipſiæ*.

Inflammation, &c. of the utmoſt importance to be attended to in accidents upon the head.

WHEN a piece of the ſkull is depreſſed, and happens to be ſlipped, and immoveably fixed under the ſound part of the bone, we muſt

What muſt be done when fragments of the ſkull are depreſſed and immoveably fixed under the ſound bone.

must apply the trepan; making such a number of perforations, as we find necessary to disengage, and extract it with ease. Sometimes the internal surface of the depressed fragment, or fragments of the skull may be a great deal broader than the external, by breaking off from the internal table, the external opposite thereto remaining unhurt; in which cases, many perforations may be found requisite, for the easy and safe extraction of the depressed piece or pieces. Within three or four years, I have been concerned in three such cases, in each of which we made four perforations; in two of them we extracted five pieces, and in the other four, with great ease; the extraction of which wou'd have been impracticable by any other means, on account of their internal surfaces being much greater than their external. We made the perforations in a line, in the most depending parts, a circumstance that shou'd always be particularly attended to, for the free and uninterrupted discharge of the matter. (*a*)

The steps to be taken when their internal surface is much broader than their external.

WHEN

(*a*) See two cases, and Pl. 2. in the 2d Edition of my Cases and Remarks.

When the ſymptoms are threatening, and we have no viſible marks to direct us to the affected part of the interiors of the head, all we can do, is to have recourſe to plentiful veneſection, repeating it according to the patient's ſtrength and conſtitution, and uſe lenient purgatives and diluents freely, obſerving a very ſtrict regimen, and embrocating the whole head, after being cloſe ſhaved, with *Ol. Roſar. & Acet.* Bleeding is to be particularly inſiſted upon; for by diminiſhing the quantity of blood, its impetus will be abated, the veſſels conſequently leſs diſtended, and thoſe ruptured will be more readily united, preventing the danger of more blood being poured out. This evacuation will greatly contribute to the removal of obſtructions in the ſmall veſſels, by making the circulation freer, and of courſe promote abſorption of the extravaſated fluids. We have from *Wiſeman* a ſingular inſtance of the good effect of bleeding, in the caſe of a Gentleman, who was thrown off his horſe; upon which accident, ſeveral of the ſymptoms, attending a concuſſion of the brain, &c. ſupervened, but were removed by plentiful and repeated bleeding;

The neceſſary ſteps to be taken when we have no *Criteria* to direct us to the part affected.

Hiſtory from *Wiſeman.*

bleeding; and indeed much more plentiful at laſt, than was intended, by an odd accident, upon opening the *jugular* vein, which had been opened ſeveral times before. This caſe is the moſt worthy attention, for our encouragement in this practice, and ſhou'd be read at large. See Book 5. Chap. ix. Obſervat. x. of his excellent works.——

From *Paré*.

Paré mentions a very pertinent caſe on this occaſion.——I was conſulted a few years ago, for a Clergyman, of a robuſt and ſanguine habit, who, by a fall from his horſe, had received a *fiſſure* upon the *occipital* bone, which was attended with moſt threatening ſymptoms. In repeated conſultations of a Phyſician and ſeveral Surgeons, trepanning cou'd not be unanimouſly agreed upon till the eleventh day after the accident, for want of well authenticated precedents to encourage the practice upon that part: however, in this time, at leaſt a hundred ounces of blood were taken away; which evacuation I believe proved the means of preſerving his life. The appearances upon performing the operation, which I had urged in the ſtrongeſt terms at every meeting, demonſtrated the abſolute neceſ-

A remarkable caſe to the ſame purpoſe.

fity

ſity of it, the *Dura Mater* being inflamed, and having a fetid, bloody *ichor* upon it.

Another inſtance of the ſame nature.

——In attending a Gentleman ſince, of a ſtrong conſtitution, with an uncommon *fiſſure* on the *Os temporale*, I had alſo the opportunity of obſerving the happy effect of copious bleeding, even after trepanning, violent ſymptoms ſtill continuing. In the firſt eight days, whilſt he laid conſtantly either in a *ſtupor* or a *delirium*, more than a hundred ounces of blood were taken away, by the concurrent opinion of two eminent Phyſicians; and in the whole, during the cure, above double that quantity, nothing giving relief, on account of delirious ſymptoms, which returned at times to a great degree, but this evacuation. The blood had the thickeſt and tougheſt buff-coloured ſize we ever ſaw. In a reaſonable time he recovered as good a ſtate of health as he had before the accident, with the perfect enjoyment of his mental faculties. ——Both theſe caſes are related fully in the 2d Edit. of my Obſervations. (*a*)

PURGING

(*a*) I have ſeen ſingular good effects from opening the *temporal* artery in concuſſions of the brain, &c. as well as in other diſorders of the head, not proceeding from

Gentle purgatives adviſable.

PURGING is recommended by all Writers, ancient and modern, on theſe occaſions; but it muſt be by medicines of the gentleſt and leaſt ſtimulating kind, and by no means ſuch, as heat the blood and increaſe its velocity, which wou'd conſequently add to the inflammation, &c. This evacuation is of great conſequence to be attended to, on many accounts, and may aſſiſt in preventing an *abſceſs* of the liver, &c. that has frequently been taken notice of by Obſervators when treating of the injuries now under conſideration, by which the patient

Of *abſceſſes* of the liver in conſequence of injuries done to the head.

from external injuries; and I ſcarce remember an inſtance where it has been opened, on ſuch occaſions, without giving relief, more or leſs. About three years ago I opened it, with the approbation of a Phyſician, for a perſon apparently in *extremis*, under a fit of the *apoplexy*; whilſt he was bleeding he was evidently relieved, and it appeared to us that his life was owing to this ſeaſonable operation.——A great many years ago, I opened it, in the preſence of Sir *Benjamin Wrench*, then a Phyſician of great character in *Norwich*, on account of an obſtinate *Vertigo*, which had long reſiſted his preſcriptions; and during the bleeding, the complaint left the patient, returning no more; at which happy event the good old Knight, whoſe memory I revere, expreſſed great aſtoniſhment.——See what *Marcus Aurelius Severinus*, the great *Neapolitan* Surgeon, ſays upon *Arteriotomy*.——When Doctor *Butter* took his degree a few years ago at *Edinburgh*, *Arteriotomy* was the ſubject of his *Theſis inauguralis*.

tient may loſe his life even though the diſorder in his head ſhou'd be cured, as is exemplified by *Job a Meek'ren*, in his letter to *Barbette*, Cap. ii. of his medico-chirurgical obſervations.——*Monſ. Bertrandi* has a diſſertation on this ſubject, to which are ſubjoined obſervations in ſupport of it, by *Monſ. Andouille*, in the third vol. of the *Mem. de l'Acad. Roy. de Chirurgie.*——*Pouteau*, in his *Melanges de Chirurgie*, particularly mentions it, and alſo attempts to give a rational ſolution, how it proceeds from injuries of the head.——*Paré* and others have obſerved *abſceſſes* upon other of the *Abdominal Viſcera*, proceeding from the ſame cauſes.

Hiſtory from *Meek'ren*.

Bertrandi; *Andouille* and *Pouteau* to be conſulted on this occaſion.

Paré and others have obſerved the like upon other of the *Abdominal Viſcera*.

BESIDES *Veneſection*, and gentle purging, occaſionally, in order to obviate bad conſequences, or remove them, the patient's diet ſhou'd be ſtrictly regarded, which ſhou'd conſiſt principally of the farinaceous kind; his drinks ſhou'd be of a reſolving nature, taken warm and very liberally, that moiſture, by the exhaling veſſels, may be conveyed to the extravaſated fluids, ſufficient to preſerve or bring them into a ſtate of fluidi-

The proper diet, &c.

ty,

ty, fit for abſorption by the bibulous veſſels: and medicines of the nitrous, attenuating kind, ſhou'd be joined with theſe diluting liquors, as the viſcidity of the blood and febrile ſymptoms ſhall indicate.——— When the head is intenſely hot and painful, *Ol. Roſar.* or *Olivar.* mixed with vinegar, makes a good topical remedy; and *Sal ammon. crud.* diſſolved in the vinegar may add to its efficacy; but we muſt not forget to have the head ſhaved cloſe all over, before the uſe of any embrocations. Under theſe circumſtances, ſpirituous applications are very improper. (*a*)

Under what circumſtances applications are to be made to the ears, upon the authorities of *Celſus, Berengarius, &c.*

Celſus, Berengarius, &c. adviſe lenient applications to be made to the ears, when a diſcharge is obſerved to proceed from them, in order to aſſiſt nature's effort, which ſhe ſometimes makes to the patient's great relief or entire cure.———*Stalpart Vander Wiel* tells us of a woman at the *Hague*, who, by a ſtroke with a round ſtick upon

Hiſtories in which diſcharges from the ears proved beneficial.

(*a*) An experienced Surgeon of great judgment, aſſured me he once ſaw dreadful effects, from the uſe of ſtrong ſpirituous fomentations and embrocations, in a contuſion upon the head; which alarming ſymptoms vaniſhed by different treatment.

upon one of the *parietal* bones, had, ſoon after the accident, ſymptoms denoting an injury of the *Encephalon*, and was cured by an evacuation of a ſerous, bloody fluid from her ear. This caſe, he ſays, he ſaw himſelf; and relates a ſimilar one, from *Langelottus*, which is alſo inſerted in the *Miſcellanea curioſa German.*——I obſerved the ſame, ſome years ago, after a violent concuſſion of the brain, in a boy about twelve years of age, who recovered; and probably this diſcharge from his ear might ſave his life.

Encouragement to uſe the trepan even in doubtful caſes.

SHOU'D not the means we have been mentioning ſucceed, in the removal of the ſymptoms, as ſoon as we can diſcover any appearance, to direct us to the part affected, though only with a ſtrong probability, it is rational, and certainly juſtifiable practice, to proceed forthwith to manual operation; conſidering, as we have ſaid, that the operation of trepanning is not in its nature dangerous, and delay may prove of fatal conſequence, as *Hildanus* informs us happened to a young Gentleman, who was committed to the care of an ignorant Surgeon, that

The fatal conſequence of ne lecting the operation as recorded by *Hildanus*.

wou'd not have recourſe to the trepan, tho' plainly enough indicated, and the patient died a few days after.——*Scultetus* gives an example of a perſon, who loſt his life by a neglect of this operation. The Clergyman before mentioned muſt inevitably have periſhed, had it not been performed; in whoſe caſe the propriety of it was evidently conſiſtent with the principles of Surgery, though the *fiſſure* was upon the *occipital* bone, yet that circumſtance occaſioned the demurs in the ſeveral conſultations; and indeed the operation has been rather too much diſcouraged, upon that part, by men of the moſt reſpectable characters, whoſe weight and authority make it very neceſſary for them, to be exceedingly cautious of what they publiſh, as it will be an example to regulate and determine the conduct of others, who may not have confidence in themſelves, for want of experience.

An inſtance of the ſame from *Scultetus*.

Another to the ſame purpoſe.

See Pag. 284.

Men of great characte ſhou'd be cautious in advancing their doctrine and opinion.

A remark that demands particular attention.

When a *fiſſure* and *concuſſion* are complicated, it ſometimes happens, that the ſymptoms, properly belonging to the latter immediately upon the accident, remit ſo much upon bleeding, ſcalping, &c. as to delude

lude the Surgeon into hope and belief, that he may ſucceed without trepanning; yet, notwithſtanding appearances become more favourable, in conſequence of ſuch meaſures having been taken, the moſt direful ſymptoms may come on unexpectedly, many days or weeks after, from extravaſation, inflammation, &c. upon the *Encephalon*, of which we have innumerable inſtances; ſome I have ſeen; two indeed of a very ſingular nature, where the remiſſion of the ſymptoms was offered, as a reaſon for procraſtinating the operation, till the *Dura Mater* was much inflamed under the *fiſſures*, to the great hazard of the patients; and this is a point that demands the utmoſt regard.——— Theſe conſiderations ſhould make us circumſpect in our *prognoſtics*, and very attentive in our practice, in order to prevent fatal conſequences. The moſt accurate and judicious Obſervers have conſidered the ſymptoms, that ſupervene ſome time after the accident, as more threatening than thoſe which happen immediately, and the reaſons are too obvious to want illuſtration.

Of wounds of the brain.

Of wounds of the brain and the treatment of them.

BEFORE deſcribing the operation of the trepan, we ſhall give a ſhort account of wounds of the brain. Theſe wounds, made by cutting or other inſtruments, depreſſed fragments of the ſkull, &c. have always been claſſed with thoſe of a mortal nature: but the many authentic hiſtories we have upon record, of wounds of this part having been cured, ſhou'd teach and encourage us, never to leave our patients in ſuch deplorable circumſtances, without exerciſing our art and ſkill to the utmoſt of our power; giving them comfortable hopes of cure, and concealing the dangerous truth from them, but making, at the ſame time, a proper *prognoſtic* to the relations, friends and by-ſtanders, in order to ſecure our reputations againſt cenſure and ill interpretations; as there generally are people ready enough to give their opinions without authority or reaſon.

These wounds are attended with ſuch ſymptoms, as we have enumerated in injuries done to the *Encephalon*. The ſame applications are proper for them, as for wounds of the membranous parts, as *Ung. e Gum. Elemi*, natural *Balſams*, &c. as have been ſpecified, avoiding all oleaginous things. The medical and dietetic rules, &c. may be collected from what has already been ſaid.

Hiſtories of cures of wounds of the brain, extracted from good authorities.

Galen mentions a caſe that ſucceeded, in a youth at *Smyrna*, wherein the anterior ventricles of the brain were opened. From *Galen*.

——*Nicolaus Maſſa* ſpeaks of the happy event of a wound, that penetrated as far as the *ſphenoidal* bone, as appeared by the introduction of the probe. *Maſſa*.

——*Amatus Luſitanus* has a remarkable hiſtory of a *Amatus Luſitanus*.

man, who in fighting a duel, near the City of *Rome*, received a thruſt with a ſword through the forehead into the brain, and was cured in fifty days, contrary to the preſage, and to the great aſtoniſhment of the Surgeons, who had the care of him.

Hildanus. *Hildanus* relates the caſe of *Horſtman's* ſiſter, who was cured by him of a wound in her brain, cauſed by ſome depreſſed fragments of one of the *parietal* bones; and mentions his maſter *Slotanus's* viſiting the patient with him. He alſo ſpeaks of a ſimilar caſe, that ended happily, where another Surgeon had prognoſticated a fatal event.

Another from the ſame Author.

Glandorpius. *Glandorpius* gives the hiſtory of a robuſt man, who received a fracture upon his ſkull, out of which was taken, by his father *Ludovicus Glandorpius*, a large portion of the brain, after extracting ſome fragments of bone. In this caſe, though the wound was cured, yet the patient remained paralytic on the oppoſite ſide, and cou'd never after bear the noiſe of drums, trumpets or guns.

Nicolaus. *Nicolaus* ſpeaks of a man, that received a wound upon the *vertex* into the ſubſtance

of

of the brain, who, the day after the accident, became paralytic, vomited, and had the common ſymptoms attending it. He eat nothing during ſix days, and drank nothing but cold water ſweetened with ſyrup of roſes; after which his appetite returned, and he recovered to admiration.

——*Jacobus Berengarius Carpenſis* ſays, he has been an eye-witneſs to the recovery of ſix perſons, from wounds of the brain; though two of them became paralytic on one ſide, but he does not mention on which.——*Braſſavolus* aſſerts he has ſeen wounds of the brain cured; in one perſon, he ſays, as much of the brain was evacuated, as wou'd fill a hen's egg-ſhell; but though the wound was cured, the patient had ever after a great impediment in his ſpeech, and at length grew ſtupid. The ſame Author mentions another patient, with an extenſive fracture of the ſkull, and loſs of a great quantity of the brain, whoſe life was ſaved, but he was deprived of ſpeech and underſtanding.—— *Horatius Augenius* relates a very ſingular caſe of a wound of the brain cured.——

Jacobus Berengarius Carpenſis.

Braſſavolus.

From the Author.

Horatius Augenius.

Franciſcus

Franciſcus Arcæus.

Franciſcus Arcæus gives us the narrative of a workman, employed in building a tower at *Valverda*, who, by a ſtone of 24 pound weight, falling from a great height upon his head, had his ſkull fractured, with fragments driven into his brain. For the ſpace of three days, he laid ſpeechleſs and almoſt lifeleſs; after the eighth day, his head opened ſpontaneouſly, from the *ſinciput* to the *occiput*, in the courſe of the *ſagittal* ſuture, and diſcovered collections of matter; ſoon after, his ſpeech returned, though imperfectly, and his eyes, which had been quite cloſed, opened; about twenty days after, he began to diſtinguiſh objects, and recover his intellectual faculties, and in four months, he was perfectly cured.——Mr. *Younge*, a Surgeon of eminence, who lived at *Plymouth*, recites many more ſucceſsful caſes, from the beſt Authors, which may encourage us not to deſpair, in his treatiſe upon this ſubject, that he was compelled to publiſh, in the year 1682, in defence of himſelf, by the diſingenuous and illiberal treatment he met with from a Phyſician,

See *Younge's* treatiſe upon this ſubject.

I believe he was alſo Author of *Cru ustr umphalis ex Terebinthina.*

who

who wou'd not admit, that wounds of the brain cou'd ever be cured; but obſtinately diſputed a well atteſted fact in a patient of his, whom he had cured of ſuch an accident. (*a*)

(*a*) The caſe of Mr. *Lauder* the celebrated Operator in Surgery at *Edinburgh*, who ſome years ago received a fatal fracture upon his ſkull by a fall from his horſe, was very ſurpriſing to all the Surgeons concerned. In the *Meatus auditorius externus* was found a ſmall portion of the brain, from whence alſo at firſt proceeded a great effuſion of blood. The *Os Occipitis* was ſeparated from its connection with the *parietal* and *temporal* bones on that ſide. A probe paſſed very eaſily through the *Meatus auditorius* to the brain; and upon opening the head after death, a fracture was diſcovered, which extended into the *Foramen magnum*.

See *Remarques ſur les playes du cerveau en Mem. de l'Acad. Roy. de Chirurgie Tom.* 1. *par Monſ. Queſnay.* ——In this Mem. he takes occaſion to recommend the application of the trepan to the *frontal ſinuſes*, which I have alſo practiſed without inconvenience.—— Diſorders may attack theſe *ſinuſes* requiring the uſe of the trepan, that cannot be remedied by any other means; as a collection of matter in conſequence of inflammation upon the *membrane* that lines the cavity, excluſive of external injuries.——Inſects of various kinds have been found in theſe *ſinuſes*, according to *Monſ. Littre* and others.

Of Trepanning.

That ſort of Trepan called the *Trephine*, is now generally uſed.

HAVING gone through the various accidents, incident to the head, and ſhewen the great utility, and abſolute neceſſity, of trepanning, in order to elevate, or entirely remove, depreſſed fragments of the bones, and to evacuate extravaſated blood, ſanies, &c. oppreſſing the brain, and producing the train of evils, we have given a detail of, we ſhall proceed to the manner of performing this very neceſſary operation, after taking notice of the parts we are adviſed to avoid in it, by the moſt eminent Practitioners; though indeed there appears ſcarce any part of the *Cranium*, from the frontal *ſinuſes* to the inſertions of the muſcles into the *occipital* bone, that may not be perforated with ſafety. There are ſome late inſtances in this kingdom, where the trepan has been ſucceſsfully applied to the frontal *ſinuſes*; and in a caſe wherein I was lately concerned,

cerned, we found a neceſſity of taking in part of one of them, whence proceeded no inconvenience.——How far it might be practicable, to ſeparate the muſcles from, and apply the trepan to the inferior part of the *occipital* bone, almoſt to the *foramen magnum*, may be worth future conſideration; as it is no unreaſonable ſuppoſition, that a caſe may happen to be ſo circumſtanced, as to admit of no other remedy, and, according to *Celſus*, a doubtful one is better than none. (*a*)

THE parts of the ſkull not eligible for the application of the trepan are. 1. the frontal *ſinuſes*. 2. the *ſutures*, in young ſubjects; for in old ones the adheſion of the *Dura Mater* to them is but little more, than to other parts of the *Cranium*. 3. the middle of the *Os Frontis*, towards the noſe, where the *ſpinal* proceſs of that bone projects

By age the *ſutures* are ſometimes obliterated.

(*a*) *Bontius*, a Writer of the beſt credit, relates a ſingular caſe of a ſailor, whoſe head was cruſhed between the ſhip and a boat, in conſequence of which dreadful accident, the greateſt part of the *occipital* bone was taken away in fragments, almoſt as far as the *Foramen magnum*, and the patient perfectly cured by him and another Surgeon.

projects conſiderably. 4. the anterior and inferior angles of the *parietal* bones, on the internal parts of which, run the arteries of the *Dura Mater*. 5. the *ſagittal ſuture*, on account of the longitudinal *ſinus* running immediately under it. 6. the *lambdoidal ſuture*, under which lies the courſe of the *lateral ſinuſes*. 7. the *occipital* bone, on account of its great inequality of thickneſs, and irregularity of its internal ſurface. 8. the *Os temporale*, as the *temporal* muſcle muſt unavoidably be wounded in making room for the trepan: and laſtly, we muſt be careful, not to apply it to a yielding fractured part of the bone, that will not reſiſt the neceſſary force in making the perforation.

Inſtances encouraging the application of the trepan to the preceding exceptionable parts of the ſkull.

THERE are inſtances from the beſt authorities, of the ſucceſsful application of the trepan to all theſe exceptionable parts, to encourage a cautious and judicious Practitioner, upon emergencies; to which, I will venture to join my own experience, hoping it may have ſome weight, in determining a matter of ſo much importance to Surgery. The frontal *ſinuſes* have been trepanned with ſucceſs in *London* and *Paris*.

tis.——Perforations may be made lower down the *Os Frontis* in children, than in adults, without running the hazard of falling upon the *ſinuſes*, for they gradually enlarge, extending higher up, as they arrive at puberty.——I have applied the trepan near the middle of the *Os Frontis*, without meeting with any obſtacle from the *ſpinal* proceſs: and at the anterior and inferior angles of the *parietal* bones, without opening the *Art. Duræ Matris.*—— The operation has been performed, by Mr. *Warner*, upon the *ſagittal ſuture*, when bits of bone ſtuck in the longitudinal *ſinus*, which he eaſily extracted, after enlarging the wound with his lancet, ſtopping the *hæmorrhage* with dry lint without any difficulty. Indeed, when we conſider the anatomy of the part, there does not appear that riſk of opening the *ſinus*, purely by the operation, as has been imagined. ——I have twice done the operation upon the *occipital* bone, and as often upon the *temporal*, without any ill conſequences; though I was under the neceſſity of cutting away a conſiderable portion of the

temporal

temporal muſcle; and ſince I publiſhed a caſe of the former, in my Caſes and Remarks in Surgery, I have read two, attended with ſucceſs, in numb. 55, and one in numb. 60 of the *Med. Muſeum*. (*a*)

All the *apparatus* to be had in exact order before the operation is begun.

AFTER having deliberately conſidered every circumſtance, and reſolved upon the operation, the inſtruments, ſpunges, dreſſings, compreſſes, bandage, and every neceſſary thing, are to be diſpoſed in perfect good

(*a*) My very worthy and ingenious friend Mr. *Stead*, Apothecary to *Guy's* Hoſpital, who lets nothing eſcape his attention that deſerves notice, writes to me thus.

"Though the lateral *ſinuſes* are very large, and "when conſiderably wounded may pour out ſo large "a quantity of blood as to occaſion the death of the "patient, yet, when a fracture demands the applica- "tion of the trepan directly upon the ridge of the *oc-* "*cipital* bone, it has been attended with ſucceſs; as "was the caſe of a perſon that a friend of mine trepan- "ned, where a ſmall ſplinter of bone was found ſtick- "ing in the left lateral *ſinus*, which, being gently ex- "tracted, only a ſlight *hæmorrhage* enſued, ſo that he "drew off, by this orifice, what blood he thought ne- "ceſſary. A day or two after, judging it proper to "take away ſome more blood, he punctured the *ſinus* "with a lancet, and ſtopped the bleeding both times, "with a little dry lint and moderate preſſure, with "the greateſt eaſe and ſecurity."

good order, that the operator may have nothing to ſeek, when he wants it. The head is to be ſhaved, if it has not been already, as indeed it ſhou'd all over immediately after any of the preceding accidents, as we have before obſerved; it is then to be reſted and firmly held upon a perſon's knees, and, with the knife appropriated to this uſe and the *ſcalprum*, a piece of the ſcalp is to be removed, of a circular, elliptical or other figure, as the circumſtances of the caſe require. The ſcalping ſhou'd be of ſuch extent, as may give a fair opportunity of making as many perforations as ſhall be found neceſſary, as far as the Surgeon's judgment and obſervation can direct him. He ought not to be ſparing in this reſpect, leſt he ſhou'd be under the diſagreeable neceſſity of extending the inciſion farther. The manner of cutting, is to apply force enough to the knife, to carry it quite through to the bone at once, not bearing too much upon the point, as we have hinted, eſpecially if we cut over looſe fragments, which we ſhou'd endeavour to avoid; the

edge

edge of the knife ſhou'd be ſo inclined, as to cut rather more of the *pericranium* than the ſkin: when we have proceeded thus far, the *pericranium* is to be raiſed a little, with the point of the knife quite round the inciſion, and then the *ſcalprum* uſed, which will be found the beſt inſtrument to clear the bone of that membrane, as I have found by frequent experience. Shou'd it be thought proper to proceed immediately to trepanning, if any conſiderable veſſels have been divided in ſcalping, they muſt be ſecured by needle and ligature; but when we do not intend performing the operation directly, dry lint with compreſs and bandage is generally ſufficient to reſtrain the *hæmorrhage*; but ſometimes the preſſure of an aſſiſtant's fingers upon it will ſerve that purpoſe, without a ligature, when we determine to proceed to the operation directly.

THAT kind of trepan, called the *trephine*, is now in general uſe, I believe, in all places; it is more commodious than the other, and can be better managed and regulated in the operation, as the differ-

ent

ent bearings may require; and it will cut full as faſt, being worked both backwards and forwards. Before we begin the operation, we muſt fix the patient's head ſo, that the light may fall properly upon it, and in ſuch a convenient poſition, that the inſtrument may be placed perpendicularly upon the part, and of ſuch a height and manner, that our attitude may be eaſy to us during the operation, which often proves tedious, requiring many perforations; as we may ſee at large *en Mem. de l'Acad. Roy. de Chirurgie*, tom. 1. *ſur la multiplicité de trépans, par Monſ. Queſnay.* (*a*)

Poſition for the patient's head.

X WHETHER

(*a*) *Scultetus* ſays, he was obliged to make ſeven perforations, in a fracture, with great depreſſion.—— *Glandorpius* ſays, his Maſter *Spigelius* made the ſame number upon the like occaſion.— *Dionis* made twelve. ——*Philip* Count of *Naſſau* had 27 made, in different parts of his head, by *Henry Chadborn*, a very eminent Surgeon; and that Nobleman has atteſted the cure under his own hand.——I made 13 in the caſe of an old man with ſucceſs, as related in my Caſes and Remarks in Surgery.———I have, within a few years, been concerned in five caſes, in which it was found neceſſary to make four perforations, in one of which there was a colliſion and ſeparation of the *coronal* ſuture about $\frac{1}{3}$ of an inch, the whole length of it, with many of the indentations of the bones broken off, and *fiſſures* extending, in various directions, a great way from thence, yet the patient recovered, being largely ſcalped and trepanned in due time, by two very able Surgeons, the late Mr. *Cooper* and the preſent Mr. *Lewis*, of *Bungay* in *Suffolk*.

Beſt method of keeping the patient's head ſteady in trepanning.

WHETHER the patient has the operation performed in bed, or ſeated in a chair, I have always found, that reſting his head on a pillow, with a board underneath it, upon the knees of an aſſiſtant, is preferable to any other manner; for being thus placed, the aſſiſtant will have more power to keep it ſteady, to reſiſt the motion of the inſtrument. Theſe circumſtances, how trifling ſoever they may appear to ſome, will be found, I am perſuaded, of conſiderable conſequence in practice, from what I have often experienced.——When the head is well adjuſted, the next ſtep is to make a hole with the perforator, deep enough to fix the central pin of the *trephine*, in order to prevent the ſaw from ſlipping out of its circular courſe, till it has formed a *ſulcus* ſufficiently deep to be wrought ſteadily in, and then the pin is to be taken out. If the ſkull is thick, the teeth of the ſaw muſt be bruſhed clean now and then, during the terebration; and dipping it into oil, as often, will greatly facilitate the motion, and expedite the operation, making it leſs diſagreeable to the patient, if he has his ſenſes; and, in order to loſe no time, it wou'd not

The manner of performing the operation.

be

be amiſs to be provided with two inſtruments of the ſame ſize.——We muſt remember, after having made ſome conſiderable progreſs in the operation, to obſerve this good rule, *Feſtina lentè*, examining the *ſulcus* often with a pick-tooth, or ſome other proper inſtrument, in order to diſcover, where the bearings are neceſſary to be made. ——Theſe precautions are of more conſequence, when we are employed in perforating a part of the ſkull, that we know has an unequal thickneſs, eſpecially after having paſſed the *Diploë*; and though we are told by Writers in general, that we may ſaw boldly, till we come at the *Diploë*, generally to be known by an appearance of blood, yet we ſhou'd be upon our guard in this point; examining if the piece be looſe, when we have ſawn ſome away into the bone, leſt we ſhou'd happen, through inadvertence, to wound the ſubjacent membrane; for in ſome parts of the ſkull, there is naturally very little *Diploë*, and in old ſubjects, ſcarce any remains, to afford direction to our judgment, by the bloody appearance: and for the ſame reaſon, it is alſo to be remembered, that children's ſkull's

A rule to be well attended to.

Turner mentions a pertinent circumſtance, which happened to him in performing this operation.

are very thin.——When the piece is quite looſe, it is to be taken out with the *forceps*, contrived for this purpoſe; and if the lower edge of the perforation is left jagged, it is to be ſmoothed with the *lenticular*, that it may not irritate the *Dura Mater*.——The next ſtep is to raiſe the depreſſed piece or pieces of the *Cranium* with the *Elevator* (*a*), or to extract the fragments of the bone, grumous blood or any extraneous body with proper inſtruments.——After this, if there appears good reaſon to apprehend that blood, lymph or matter is contained under the *Dura Mater*, we ſhou'd open it directly with a lancet very cautiouſly, endeavouring to avoid the blood-veſſels ramified upon it, and thoſe which lie immediately under it: and, on this occaſion, it will be prudential to conceal the inſtrument as much as we can, by wrapping it all round with tow almoſt to the point, in order

Of opening the *Duræ Mater*.

(*a*) Within a few years, the *Elevator* has received great improvement, by the addition of *Fulchra* to reſt upon the ſound part of the bone. *Monſ. Petit* began the improvement, and it was perfected by *Monſ. Louis*. ——It is now adopted by our Surgeons, and found among the modern ſets of inſtruments for this operation.

der to prevent impreſſions being made upon the ſpectators to our prejudice; for though the practice is ſupported by reaſon, and the authority of the beſt Surgeons, yet nothing but ſucceſs can effectually ſecure our reputation againſt the impertinence of buſy people, who judge and determine from events, without conſidering circumſtances.——I have been ſo fortunate as to ſucceed twice, evidently ſaving the patients lives by this means: and lately I aſſiſted a Surgeon, deſervedly of great character, in trepanning a boy, on account of a very extenſive fracture upon the right *parietal* bone, three days after the accident, and we found, upon removing a large portion of the ſkull, a conſiderable quantity of a ſerous fluid collected under the *Dura Mater*, which, upon preſſing with our fingers, bubbled up through ſeveral ſmall holes in it, made by its violent detachment from the ſkull. We agreed upon opening this membrane more than an inch, with a pair of very fine ſciſſars, for the free evacuation of the extravaſated fluid; and the patient recovered, without any threatening ſymptoms ſupervening, and thoſe, that attended before the operation, vaniſhed ſoon after. (*a*)

The happy effects of opening the *Dura Mater*.

(*a*) See Caſes and Remarks in Surgery, Edit. 2. Pag. 35.

How the crown of the trepan is to be placed in *fiſſures*.

WHEN we have recourſe to the trepan, on account of a *fiſſure*, in which the bone will not yield, we ſhou'd apply the inſtrument ſo as to include part of it, if not directly over it, as it is moſt likely, the extravaſated blood, or lymph, ſhou'd be found directly underneath it : and when the *fiſſure* is of great extent, it may be proper to make a perforation at each end, if the whole can be conveniently brought in view ; and, in ſome caſes, more perforations may be requiſite, according to the courſe of it, even to its full extent.

How the trepan is to be applied, in order to remove depreſſed fragments of the bone, &c.

WHEN we propoſe to make ſeveral perforations, in order to remove depreſſed fragments of the bone, that are firmly fixed, and having the internal ſurface larger than the external, or to raiſe them ſufficiently, it is neceſſary to apply the trepan, as near the fractured parts, as they will admit of ; making the perforations adjoining, to ſave the trouble of cutting the intermediate ſpaces with the head-ſaw : and, as before hinted, we ſhou'd invariably obſerve, to make the perforations in the moſt depending parts we can, for the ſame reaſon,

See Pl. 2. in my Caſes and Remarks in Surgery, Edit. 2.

as

as we endeavour to obtain depending openings in the fleſhy parts. And in perforating the ſkull, where there is great inequality of its thickneſs, it appears more adviſable, to raiſe the piece, before it is cut quite thro' in every part of it, to obviate injuring the ſubjacent membrane with the ſaw.

A neceſſary remark.

When the ſkull has ſuffered an injury upon a *future*, and it is not thought adviſable to uſe the trepan there, eſpecially in young ſubjects, in whom the *Dura Mater* adheres more ſtrongly than in adults, as has been remarked, we ſhou'd always remember, to make a perforation on each ſide of the *future*, for this obvious reaſon, becauſe there cannot be a free communication between the one ſide and the other, on account of the attachment of that membrane to the *future*.

Reaſon for making a perf ration on each ſide the *future* when that is injured.

After the elevation of the fragments of the bone, or the removal of them, the extraction of extraneous bodies, and the evacuation of extravaſated blood, lymph, or ſanies, &c. the membranes may be dreſ-

How to treat the wound after the operation, &c.

ſed

Till the laſt reformation of the College it was called *Linimentum Arcæi.*

ſed with *Unguent. e Gum. Elemi,* extolled by *Franciſcus Arcæus,* the inventor of it, made of a ſofter conſiſtence with *Balſ. e Copaib.* or ſome other natural Balſam; applying it juſt warm, with a feather, and ſoft lint lightly over it, dreſſing the other parts, as we have already directed in wounds of the head: after which, it may be proper to embrocate the whole head with *Ol. & Acet.* adding a little *Spirit. Lavend.* and to apply a plaſter of *Cerat. alb.* or ſome ſuch eaſy application, with gentle compreſs and bandage. The proper bandages upon this occaſion are what the *French* call the *Grand Couvre-Chef,* and the *Capeline* or reflex bandage, which require great care and exactneſs in their application, for the patient's eaſe. A bandage with ſix tails, or a kind of coif with lappets affixed to it, may be found very applicable in ſome caſes; but to ſerve this purpoſe, the Surgeon muſt occaſionally exerciſe his invention.

Deſcribed in the article of bandage.

What neceſſary to be obſerved in the cure.

AFTER the dreſſing, the patient is to be placed in as eaſy a poſition in his bed as poſſible, with his head and ſhoulders elevated a little more than ordinary; and the rules we have

have laid down in the cure of wounds are to be duly obſerved.——Warmer applications and bandages are required in winter than in ſummer.—The degree of heat in the room muſt be regulated, according to the temperature of the ſeaſon, and it is neceſſary to exclude the light.——In injuries of the head, bad ſymptoms are apt to come on ſooner in warm, moiſt, ſultry weather, than in a cold ſeaſon, when it may be very beneficial to make the circumambient air warm, and dreſs the wound as expeditiouſly as poſſible, defending it from the attack of the cold air.——A ſtrict regimen and obſervance of the non-naturals are now of the greateſt importance to be attended to; for a ſlight tranſgreſſion therein may prove of fatal conſequence, as we have amply evinced.

What appearance the wound has in favourable caſes.

When the digeſtion of the wound proves kind, we ſhall ſoon obſerve granulations of fleſh, of a good complexion, ſhooting from the extremities of the veſſels, and throwing off the parts of the *Dura Mater*, that may have ſuffered; which, by extending themſelves and twiſting one with another, form

form in the aperture, a ſubſtance having the appearance of fleſh. The ſame operation of nature, in a longer time, throws off exfoliations from the circumference of the perforation, and other parts of the denudated ſkull, thicker or thinner, ſooner or later, according to the age and conſtitution of the patient, the degree of injury the ſubſtance of the bone has ſuſtained, the ſeaſon of the year, &c. The granulations which ariſe from the different parts, uniting together, conſtitute the organized or vaſcular, carnous ſubſtance, which is called the incarnation of the wound : and this regenerated ſubſtance, in young ſubjects, generally acquires a perfect boney hardneſs in the perforation, but ſeldom in old perſons. (*a*)

A

(*a*) I was deſired, ſome years ago, to ſee a lad about twelve years of age, who had been trepanned two years before, by a good Surgeon, on the left ſide of the *Os Frontis*. The wound was healed, but in the very centre of the perforation, I obſerved a pulſation of ſmall extent. Upon gentle preſſure in this point, the boy complained of a ſlight degree of pain, then his eyes began to roll about and have uncommon motion, ſoon after this his ſight grew dim, his ſenſes became

A FUNGOUS ſubſtance is very apt to fill up the perforation after trepanning, ſometimes growing to a conſiderable ſize, reſembling a muſhroom with the ſtalk in the perforation; and ſometimes the *Dura Mater* itſelf is forced through, by the propulſion of the ſubjacent parts, for want of an equable reſiſtance, to ſupply the place of the bone. When there is a laceration of the *Dura Mater*, the *pia Mater*, and brain itſelf, may protrude, as remarked by *Hildanus*, his maſter *Slotanus*, *Tulpius*, *Schenkius*, *&c.*

Concerning fungous excreſcences after trepanning, &c.

IN order to remove theſe *Fungi*, ligature, exciſion, and eſcharotics, have been recommended; and ſometimes practiſed with fatal effects, throwing the nervous ſyſ-

Methods recommended to remove theſe *Fungi*.

tem

came affected, and his ſtrength failed; and had the preſſure been continued, he certainly wou'd have fallen down; but upon removing it he appeared perfectly well again preſently. I repeated the experiment two or three times with the ſame effect. This caſe is ſomething like the beggar's at *Paris*, known to almoſt every body.

tem into great diſorder (*a*). And as there is ſo much to be apprehended from theſe methods, we ſhou'd, by all means, take early care to prevent the growth of ſuch excreſcences; which, if neglected, may increaſe to a great ſize in a ſhort time; an extraordinary inſtance of which I obſerved ſome years ago, in an Hoſpital in *London*, upon the examination of a young woman's head, who died about ten days after having been trepanned in three different places, on account of a concuſſion of the brain. Thro' each perforation, a fungoſity was grown conſiderably above, and ſpread upon, the ſurface of the bone, reſembling what I have deſcribed. Extravaſations were alſo found, from ruptured veſſels in the plicatures of the *pia Mater*, with a large quantity of a lymphatic fluid in the ventricles of the brain.

A caſe in which large fungoſities appeared in the perforations ten days after trepanning.

I

(*a*) An excellent Practitioner, with whom I am particularly acquainted, told me, that upon cutting off one of theſe *Fungi*, his patient was immediately thrown into univerſal ſpaſms, which made him fear the loſs of his life wou'd have been the conſequence of it. Since this alarming appearance he has always obſerved the preventive method I am about recommending.

Belloſt's method of preventing the growth of *fungi* after trepanning recommended.

I HAVE found, by repeated trials, that *Belloſte's* method will effectually anſwer the important end of preventing the growth of theſe excreſcences, when the *Dura Mater* is not lacerated. And once I experienced great advantage from it in a caſe, where it was lacerated; under which circumſtance, perhaps it may be of more ſignal ſervice. The perforated plate of lead, invented for this purpoſe, is deſcribed by a figure in *Belloſte's* Hoſpital-Surgeon, and in *Heiſter's* Syſtem of Surgery, Pl. 15. Fig. 14. 15. More than thirty years ago, before I had read that uſeful book, I made and uſed it myſelf, for the ſame obvious reaſon, that put him upon the invention, and which at the very firſt ſucceeded to my wiſh. It is eaſily made, after being exactly marked out with the crown of the trepan.

The manner of uſing *Belloſte's* plate.

THE beſt method of uſing this plate, that I have been able to diſcover from my experience, is firſt to apply to the *Dura Mater* a *ſindon*, ſpread with the balſam recommended, or dipped into it moderately warm, according to the ſtate the membrane appears in; then the plate is to be exactly adjuſted

juſted in the perforation upon the *ſindon*, having the ears of it turned back upon the ſkull; over which, a compreſs, conſiſting of a few doubles of common plaſter, with a piece of very thin ſheet lead or card interpoſed, is to be laid; filling the wound up with even lint, rather above the level of the ſcalp; then a ſmall, eaſy compreſs of cloth, faced with *Cerat. alb.* is to be applied, with a piece of card or thin ſtiff paper on the outſide of it; over which, ſtrips of common plaſter, about an inch broad, are to be laid crucially, extending two or three inches beyond the compreſs. By this means, the plate will be properly confined, and the degree of preſſure may be eaſily regulated, without inconvenience to the patient, or interrupting the diſcharge at the wound; and ſhou'd a greater degree of preſſure be required, it may be obtained, by thickening the compreſs, and making one of the ſtrips of plaſter paſs through a ſlit in the other, as in the uniting bandage. After proceeding thus far, the head is to be embrocated, and a large thin compreſs, ſpread with *cerate*, applied over the crucial plaſters,

ſters, with eaſy bandage, as before directed. When the *Dura Mater* is granulated with fleſh, the *ſindon* or lint, moiſtened with a mixture of *Tinct. Myrrhæ* and *Aq. Calcis*, is a good application; and the other parts of the wound are alſo to be attended to, according to the rules of Surgery which we have before laid down, in order to prevent the luxuriance of fleſh, till the exfoliations are completed; for ſhou'd this point be neglected, and looſe fleſh ſuffered to creep upon the bone, from the circumference of the wound, much inconvenience and trouble, beſides pain to the patient, might proceed from ſuch inattention, as I have ſeen very lately.

Fungoſities moſt apt to ariſe from ſingle perforations.

THOUGH from what I have obſerved, fungoſities are more to be guarded againſt after ſingle perforations in trepanning, yet in a great loſs of ſubſtance of the ſkull, a perforated plate of lead well adapted to the ſpace, having its edges carefully conveyed a little way between the ſkull and the *Dura Mater*, this being firſt dreſſed as directed, may prove very uſeful, as has been experienced by other Surgeons as well as myſelf,

A perforated leaden plate of uſe when there is a great loſs of ſubſtance of the ſkull.

ſelf. Beſides the good effect it may produce, in ſupplying the natural preſſure of the bone for a due time, it will give more room for the evacuation of any fluid that may be there contained, and alſo defend that membrane againſt the aſperities of the bone.

By theſe meaſures, I have always been able to obviate the inconveniences, ariſing from fungous excreſcences, in conſequence of trepanning, &c.

Good and bad omens after the operation.

An abatement of the ſymptoms after the operation, with a good aſpect of the wound, in a healthy ſubject, give us reaſon to hope for ſucceſs; but if the ſymptoms continue threatening, with a dryneſs, glaſſy appearance, or livid color, of the wound, or a diſcharge of a fetid gleet from the membranes or brain, they are to be looked upon as very bad omens: however, we are to omit the uſe of no rational means, having inſtances enow, upon record, of the happy event of the moſt alarming caſes to encourage our perſeverance.——The ſymptoms, after the operation, may require frequent bleeding,

as well as a ſtrict regimen, and obſervance of the Non-naturals, as has been particularly exemplified in the Gentleman's caſe, which I have mentioned, who was trepanned on the *temporal* bone.

The ſudden relief which the operation ſometimes gives.

It is ſurpriſing ſometimes to ſee the very ſudden good effects of the operation, as in the Clergyman's caſe I have related.—— Profeſſor *Monro* ſays, he ſaw a ſoldier trepanned on account of a fracture with depreſſion of his ſkull, when he was quite ſtupid, and who almoſt perfectly recovered his ſenſes, half an hour after the operation: his face and eyes too which were prodigiouſly ſwelled before, became viſibly leſs in a ſhort time.

Prudent rules and cautions to be obſerved after the cure.

Shou'd the patient, at any time after the cure, complain of pain or diſorder in his head, with ſymptoms of plenitude, recourſe ought to be had immediately to bleeding and gentle purging, with the obſervance of a ſpare diet: and for ſome time after his cure, he ſhou'd alſo be very exact in his regimen and government of himſelf, both as to body and mind; and

it will be very prudent to wear, for ſome conſiderable time, a thin braſs, ſteel, or tin plate, to defend the part againſt external injuries, eſpecially if there has been any great loſs of the bone; under which circumſtance, in old perſons, ſuch a defence may be found neceſſary for life. (*a*)

Of tumors on the heads of new-born children.

As we have no deſcription of theſe tumors, that can be relied on, in any Writer that I have ſeen, I here ſubjoin a ſhort account of the nature, and proper method of

(*a*) Theſe eminent Writers may be occaſionally conſulted upon this ſubject. *Hippocrates*, *Berengarius*, *Hildanus*, *Fallopius*, *Magetus*, *Scultetus*, *Fienus*, *Tulpius*, *Schenkius*, *Bohnius*, *Glandorpius*, *Paré*, *Marchetti*, *Wiſeman*, *Belloſte*. *Van Swieten*, *&c.* and more particularly *Monſ. Queſnáy's* diſſertations, in *Mem. de l'Acad. Roy. de Chirurgie* Tom. 1.——Mr. *Pott's* judicious treatiſe upon this ſubject ſhou'd by no means be forgotten: and among my Caſes and Remarks in Surgery there are ſome extraordinary caſes.

of treating them, to assist the judgment and practice of the unexperienced.

Nature of this kind of tumor.

This kind of tumor proceeds from an extravasation of blood; probably, in consequence of some injury in a laborious, hasty or injudicious delivery; as time shou'd always be allowed for a gradual dilatation of the parts, to admit of the exclusion of the fœtus with safety. It is seldom observed on any other parts of the head, than the *parietal* bones; and the extravasated blood is most frequently lodged between the *Pericranium* and the *Cranium*.

Description of the tumor.

This tumor is generally circumscribed by a ridge, when the extravasated fluid is contained between the *Cranium* and *Pericranium*, and feels as if there was a depression or deficiency of the bone; but the deception is owing to the fluid in the distended *Pericranium* yielding to the fingers, and to the ridge circumscribing the tumor, which may be taken for the edge of the bone, without very accurate examination.

Erroneous opinions concerning it.

SOME Surgeons have looked upon this ſort of tumor as an *aneuryſm*, proceeding from the inſide of the ſkull; others as a *hernia* of the brain; but was either of theſe the caſe in queſtion, it muſt appear between, and not upon, the bones, as it does; and according to the firſt ſuppoſition, a pulſation wou'd be obſerved in it. That eminent practitioner, *Monſ. Le Dran*, one of the beſt and moſt accurate of the *French* Writers, had very confuſed ideas of this kind of tumor, as we may ſee in his firſt obſervation. (*a*)

General method of cure in the Foundling-Hoſpital.

THE Surgeons of the Foundling-Hoſpital, who have had the greateſt opportunities of diſcovering the nature of theſe tumors, and the beſt method of cure, from their large experience, ſay, they generally ſucceed by opening them, in caſe the children are otherwiſe healthy; and that they prefer this method, rather than waiting in expectation of abſorption by any

(*a*) *Sur la tumeur à la tete d'un enfant nouveau né.*— *Monſ. Levret* ſlightly mentions this kind of tumor in *l'Art des Accouchemens.*

any other, apprehending that the bad conſequences they have ſeen may proceed from the putrid quality of the fluid, contracted by its ſtagnation. They make an inciſion the whole length of the tumor, lay ſoft dry lint under the edges of the wound, to favour the diſcharge of the extravaſated blood, after preſſing out as much as they can without bruiſing the tender parts, and then apply a pledget of common digeſtive over the lint, with eaſy compreſs and bandage. By this treatment, thoſe Gentlemen have aſſured me, that they very ſeldom meet with any trouble in the cure, to diſcourage the practice; but when the blood lies next the bone, very thin ſcales will ſometimes riſe and retard the cure a little. (*a*)

(*a*) I viſited that Hoſpital with my Friend Mr. *Tomkyns*, on purpoſe to get the beſt information I cou'd in this matter; and at a houſe that is an appendage to it, appropriated for the reception of children as ſoon as they are born, I ſaw ſome of theſe tumors opened, ſome under cure, and many that had been cured by opening: and according to the Hoſpital admiſſion book, which I examined for ſome years back, I obſerved that ſcarce a week paſſed, without a caſe of this kind having been admitted.

The opinion of other practitioners in the treatment of these tumors.

Brown paper makes a better compress than cloth, upon this occasion, and may be moistened with a sponge dipped into the liquor, as often as it grows dry.

SOME other Practitioners, of experience too, whom I have talked with upon this subject, are against opening these tumors; advising the application of compresses, moistened in warm austere red wine, or red wine and vinegar, to be renewed as often as they grow dry, and say they have generally observed, absorption of the fluid to be the effect of this method, without bad consequences: however, shou'd there appear no diminution of the tumor, by regularly pursuing this method a reasonable time, it will then certainly be advisable to open it, lest the fluid shou'd be absorbed in a putrid state, or the bone injured by it, whence bad consequences might ensue: and if the bone received an injury originally, the necessity of opening is indisputable. (*a*)

(*a*) I have in my possession a *parietal* bone, that was fissured in a case of this nature, with the *pericranium* annexed to it; shewing the extravasation was between that and the bone, in which the circular ridge I have mentioned evidently appears.

I HAVE ſucceeded in ſome caſes by both methods, attending to theſe circumſtances and conſiderations, to direct my judgment and practice.——I have generally added *Sal. ammon. crud.* to the above mentioned applications.

Of wounds of the forehead, face and its parts; neck and its parts, and the tongue.

INCISED wounds of the forehead and face require nothing peculiar in their management. The lips of them are to be kept as much in proximity as poſſible by the dry future, as has been deſcribed, to prevent deformity of the *cicatrix*. And in lacerated or contuſed wounds of theſe parts, the general rules that have been preſcribed in ſuch caſes, are to be obſerved: but when either of the *ſalival ducts* are totally divided, in a wound of the cheek, or even when partially divided, and cannot be

The treatment of wounds of the *ſalival ducts*

The ſuperior *ſalival duct* is called *Ductus Stenonis*, and the inferior, *Ductus Whartoni*.

be closed up by the generation of flesh, there will consequently be a great effusion of *saliva* externally; and the course of this watery fluid must be diverted, by making a perforation into the mouth with some proper instrument, drawing a seton thro', continuing it a due time, and then endeavouring to heal the external aperture.—Professor *Monro* recommends this method; and I have practised it with success to my wish. (*a*)

Of the treatment of wounds of the *lymphatics* belonging to glandular bodies.

Sometimes in wounds of the glandular parts hereabouts, *lymphatics* are also divided discharging a great quantity of such a kind of fluid; but it is not so difficult to restrain this effusion, as that proceeding from the division of the *salival ducts*. Lint moistened in *Alcohol. Vin*, or a solution of *Sacch Saturn*, in *Aq. Calc.* & *Alcohol. Vini p. æ*, applied and assisted with a proper degree of pressure, and dressing seldom, will generally answer the purpose,

(*a*) See Med. Essays vol. 2. Ess. 13. See also *Monf. de Roy's* method, in *Saviard's* observations.

purpoſe, as I have experienced in ſeveral inſtances; particularly in two, where the diſcharge was very profuſe, from wounds of the *parotid* glands. This treatment may be firſt tried, when the *ſalival ducts* are opened, before making the perforation into the mouth, taking particular care in reſpect to the compreſſion; a caſe of which kind, that ſucceeded, is mentioned in my Caſes and Remarks in Surgery.

The treatment of wounds of the lips, noſe, ear, eye-lids and eye itſelf.

WOUNDS of the lips, when totally divided, muſt be ſtitched as deſcribed for the hare-lip Pag. 154; otherwiſe the ſkin will draw over each lip of the wound ſeparately, and prevent the reunion. The ſame will happen in wounds quite through the wings of the noſe, ear or eye-lids; but the latter require very nice and tender management, from the exquiſite ſenſibility of the parts; on which account, beſides the general method here laid down as to the treatment of the wound itſelf, we muſt particularly attend to the prevention or removal of pain, inflammation, &c. by bleeding, laxatives, and a proper regimen, as well as by anodyne, emollient and refrigerating

gerating topics ; as a fomentation prepared with poppy-heads, emollient herbs, &c. boiled in water with the addition of milk, and a white-bread poultice ; and, before the application of the latter, a plaſter of a cooling *cerate* ſhou'd be applied, dreſſing the wound with ſome mild balſamic medicine. *Emulſ commun. & Julep. e Camphora p. æ.* make a good *Collyrium*, to be uſed in waſhing purulent matter or other foulneſs out of the eyes, in a tender and inflamed ſtate. This general method may alſo be followed in a wound of the eye itſelf ; which is very apt to inflame, and be attended with a great degree of pain, extending into the head, and ſometimes exciting a violent fever, delirium, &c. therefore the utmoſt attention is to be paid to wounds of this part at firſt, in order to obviate bad conſequences. (*a*)

It

(*a*) It being now generaly believed that the patient is more liable to bad accidents in conſequence of extracting the *cryſtalline*, than in depreſſing it in the *cataract*, *Daviel's* method loſes credit with many of the moſt eminent of the profeſſion ; and in ſeveral inſtances

——It is worth conſidering, with what kind of weapon, and in what direction of it, the wound was inflicted; for through the orbit it might eaſily penetrate even to the brain, of which we have an inſtance in *Ruyſch*.——Some time ago I was deſired to viſit a perſon in *Extremis*, four days after receiving a wound of this nature by a cow's horn. And, lately a Surgeon aſked me to viſit a patient with him, who five days before had a piece of wood forced into the orbit of one of his eyes, penetrating quite to the brain, whence direful ſymptoms enſued: and that day the convulſive contraction called the locked-jaw came on; ſoon after which he died.

THE

ces I have obſerved ſuch bad conſequences, as cou'd not have happened by depreſſion, particularly in one caſe, though the celebrated *Wenſel* was the Operator. ——*Monſ. Daviel* has had the honor of this diſcovery aſcribed to him, but the ſame operation was practiſed ſixty years ago, by *Monſ. St. Ives* and then by *Mery* and *Petit*, when the *cryſtalline lens* was become differently diſeaſed, and had paſſed through the pupil into the anterior chamber of the eye; in which caſe depreſſing of it is impracticable: and probably it will be found moſt adviſable to confine this operation of extracting it to the diſeaſe thus circumſtanced.

See *St. Ives des Maladies des Yeux*, Chap. xxi.

Of the treatment of wounds of the neck.

THE neck is a very dangerous part to receive a wound in, on account of the large blood-veſſels, the *Trachea*, the *Œſophagus*, *ſpinal* marrow, and recurrent nerves, which have a great influence upon the voice.——When a *carotid* artery is opened, we muſt uſe our utmoſt endeavours to paſs a ligature about it, above and below the opening, and if that cannot by any means be effected, try other expedients, as mentioned in Pag. 108.——If the internal *jugular* vein happens to be wounded, and it can eaſily be come at, a ligature is adviſable above the aperture; or a *ſtyptic*, or ſome fungous ſubſtance, with good compreſſion, may anſwer the end.——In the ſecond vol. of the *Mem. of the Royal Academy of Surgery*, there is an ingenious, and well adapted compreſſive machine for this purpoſe.——When the *hæmorrhage* is ſtopped, the wound is to be dreſſed as has been directed.

See Pag. 113 and 114.

WHEN the *Trachea* or *Œſophagus* has received a large wound, the interrupted or twiſted *ſuture* is neceſſary; and in ſome caſes, ſtrips of adheſive plaſter may be found

found uſeful, either with or without the *ſuture*. The latter of theſe parts is very difficult to come at, from its ſituation behind the *Trachea*: and if either ſhou'd be totally divided, little is to be expected from art. (*a*)

THESE wounds are to be treated in the common manner, with agglutinating, balſamic applications and eaſy bandage, obſerving an exact regimen. The patient ſhou'd be ſtrictly injoined to live upon a ſoft, balſamic diet, of ſuch conſiſtence, as may eaſily ſlip down, with as little of the action of deglutition as poſſible. His body ſhou'd be kept open with the frequent repetition of clyſters, leſt any kind of purging medicine, taken by the mouth, ſhou'd offend the ſtomach and excite vomiting, which might affect the wounded parts, and prove of fatal conſequence.—When deglutition is wholly obſtructed,

without

(*a*) See *Eſſai ſur Oeſophagotomie par Monſ. Guatt ani, en Mem. de l'Acad. Roy. de Chirurgie*, tom. 3.

without a total diviſion of the parts, we have good authorities to endeavour to ſupport the patient, and prevent his famiſhing, by nutritive clyſters, till the cauſe of the obſtruction can be removed; as *Oribaſius*, *Ætius*, *Tulpius*, *Bartholinus*, *&c.* have recommended.

History from *Benedictus Bonacurſius.*

Benedictus Bonacurſius ſays he cured a perſon, who cut his own throat in priſon, making a large wound in the *Trachea* and *Œſophagus*, which was deemed incurable.

History from *Bodinns.*

Bodinus, in *Theatro Naturæ*, ſays, that *William* Prince of *Orange*, having received a wound in his throat upon the *Larynx*, loſt the ſenſe of taſting; and that a *French* ſoldier from ſuch an accident became mute. (*a*)

(*a*) See *Mem. par Monſ. Verdier, en Mem. de l'Acad. Roy. de Chirurg.* tom. 3 *ſur une playe à la gorge, avec des remarques intereſſantes à ce ſujet.*

An hiſtory of a ſingular caſe, and of a very intereſting nature.

I HAVE lately had the opportunity of examining with a Phyſician and a Surgeon, the parts which ſuffered by an *Hypochondriac*, who cut his throat with a razor. The wound extended almoſt from ear to ear, but neither of the *carotid arteries*, or *internal jugular veins* were opened. The parts were divided into the *pharynx*, preciſely level with the *thyroid cartilage*, in ſuch a manner, that in the act of deglutition, every kind of aliment, in its progreſs towards the *pharynx*, bore down the *epiglottis*, letting moſt part of it paſs thro' the wound, ſome falling into the *trachea* by the *glottis*, exciting a violent, convulſive, ſuffocating cough; but little or none arrived at the *pharynx* to deſcend the *Œſophagus*; yet he lived 14 days, having nutritive clyſters frequently given.

In order to have demonſtrative ideas, of the wound under conſideration, take a ſufficient portion of the *Trachea* and *Œſophagus* of a ſheep or calf, together with the *larynx* (which is the ſuperior part or head of the *trachea*, conſiſting of the *epiglottis*, the *thyroid*, two *arytenoid* and *cricoid cartilages*) the *pharynx*, *os hyoides* and *tongue*: then make a ſemilunar wound, at the very edge of the *thyroid cartilage* into the *pharynx*: ſuſpend theſe parts by the *os hyoides*, and let the wound have its full *hiatus*, by hanging a weight at its lower and anterior part; then paſs your finger in the courſe of the aliment in deglutition, and you will find it propels the *epiglottis* into the wound, by the ſlighteſt touch imaginable.

In this caſe, the *epiglottis* being drawn out of its natural poſition, into a very inclined plane, by the flying up of the *os hyoides*, upon the diviſion of the muſcles, attached to its *baſis*; and the *epiglottis* having loſt its ſupport, the ſmalleſt weight of aliment neceſſarily made it yield immediately:

mediately: and even when the inclination of its plane was in ſome meaſure leſſened, by bringing the head forwards, and by the interrupted *ſuture*, which was made in the teguments, ſoon after this fatal accident happened, yet that obſtruction to the cure was not remedied.

In this ſtate the parts remained eight days, then the ſtitches were taken out; and the true nature and condition of the wound evidently appearing, a ſtitch was made from the inferior part of the *os hyoides*, brought down by the diſſecting hook, to the ſuperior part of the *thyroid cartilage*; but the cough ſtill continuing, in conſequence of attempting to ſwallow any food, and alſo at other times, by the irritation of matter falling upon the ſame parts, the ſtitch was ſoon broken out; rendering this rational ſtep entirely fruitleſs: had it been practiſed at firſt, and the patient nouriſhed wholly by clyſters, in order to have prevented the cough for

ſome days, perhaps it might have ſucceeded. (*a*)

HAD the true nature of the wound been at firſt diſcovered, and cou'd a proper number of ſtitches have been made, with very ſtrong, well-waxed flat ligatures, encompaſſing the *os hyoides*, and paſſing through the *thyroid cartilage*, a few lines below its edge, including the teguments, and ſtudiouſly endeavouring to avoid the *epiglottis*, tying the ligatures with ſlipping knots for obvious reaſons, this ſeems to us the moſt probable method to have anſwered the end: or, cou'd only one ligature have been paſſed, in this manner, by a needle more than ordinarily curved, with the aſſiſtance of the *Port d'Aiguille*, or by a hafted needle, having an eye near the point,

(*a*) In a caſe of this kind, the clyſters ſhou'd be given in ſmall quantities, and injected as far up as poſſible, by the ſyringe appropriated to this uſe.——The mouth may be kept moiſt by frequently holding a ſmall quantity of ſome ſmooth, pleaſant thing in it, without attempting to ſwallow; which may be taken up by the abſorbing veſſels.——Reſt and quiet ſhou'd be moſt ſtrictly enjoined; and, to procure ſleep, *Tinct. theb.* may be occaſionally given in the clyſters, at diſcretion.

point, round the *baſis* of the *bone*, after drawing it down with a ſtrong diſſecting hook, perhaps that might have given an opportunity of other ſtitches taking place on each ſide of it, by paſſing through the teguments and edge of the *thyroid cartilage*; if found abſolutely impracticable to convey one on each ſide about the bone, at a little diſtance from its *baſis*: and it may be worth conſidering, how far purſuing the *bone* with a longitudinal inciſion, might facilitate the paſſing a ligature round its *baſis*.——Here indeed lie difficulties that may prove inſuperable; yet, as it is a matter of the laſt importance, we cannot forbear recommending every rational attempt which occurs to us, to the conſideration of our brethren; and not knowing we have a ſimilar caſe to it, in the records of Surgery, though, conſidering the circumſtances, it is not improbable to have often happened and paſſed unnoticed; this conſideration is a farther encouragement to our offering theſe hints.

When a perſon is ſo unhappy as to attempt ſuicide, in this manner, and hap-

pens to wound both *Trachea* and *Œſophagus* at the ſame time, it muſt generally be below the *thyroid cartilage*, that, in adults, being almoſt as hard as bone, the ſolidity of it increaſing with age: beſides from the looſe attachment of this *cartilage* to the adjacent parts, it readily gives way, abating the force of the ſtroke; ſtill they may both ſuffer at once, by the cut of a broad ſword, or the thruſt of a ſharp-pointed weapon.

Extraordinary inſtances of pins and needles ſticking in the *œſophagus*.

In the ſpace of a year, a farmer's ſervant came to me twice with a pin and once with a needle ſticking in the *Œſophagus*. The needle and one of the pins I extracted with a pair of *forceps*, properly curved to ſerve that purpoſe; the other lying out of the reach of the *forceps*, I ventured to attempt to thruſt down with a whale-bone, having a piece of ſpunge tied ſecurely to the end of it, and happily ſucceeded. The year following, when ſhe lived at a great diſtance from me, not being yet ſufficiently admoniſhed, by the dangers ſhe had eſcaped, againſt the fooliſh cuſtom of putting pins or needles into her mouth,

another

another needle ſlipped into the *Œſophagus*, where it was fixed, and cou'd not be removed by art; but in length of time, after cauſing a violent and moſt dangerous inflammation, it made its own way by an *abſceſs* externally, which was ſoon cured. This narrow eſcape effectually cured her inadvertence. (*a*)

Of the treatment of wounds of the *ſpinal-marrow*.

WOUNDS in any part of the *ſpinal-marrow* require no peculiar treatment, though they are always attended with alarming ſymptoms, from its being an appendage of the brain; and the parts that receive nerves from thence will ſuffer a *paralyſis*, and ſometimes mortify; inſtances of both which dreadful conſequences I have ſeen in injuries of this part. (*b*)

(*a*) See Obſervations *ſur les corps éſtranges arrêtes dans l'œſophage &c. en Mem. de l'Acad. Roy. de Chirurgie par Monſ. Hevin.*

(*b*) Vid. *Comment. Van. Swiet. in Aphoris. Boerhaavii* § 162, concerning the effect of injuries of the *ſpinal* marrow.

Of the treatment of wounds of the *recurrent* nerves.

When the *recurrent* nerves are divided, little is to be feared on that account, more than having the voice or ſpeech affected, in caſe no other material part of the neck has ſuffered; nor do theſe wounds require any particular management.

The uſe of the tongue, and the treatment of wounds in this organ.

The tongue is of great uſe, not only in forming and modulating the voice, but in taſting and maſticating our food, and in deglutition; * therefore large tranſverſe wounds of this organ demand particular conſideration and attention. In theſe caſes ſtitching is recommended by Surgeons in general; but as the tongue is of a very ſoft, looſe texture, the ſucceſs of it is precarious, as well as the operation difficult to perform: however, ſhou'd it be thought moſt adviſable to attempt it, the tongue,

* I have ſeen and examined the mouth of a woman at *Wickham* in *Suffolk*, who loſt all, but a very ſmall portion of her tongue, when ſhe was a child, by a *phagedœnic* ulcer, yet ſhe ſpeaks very articulately, and ſwallows her food without difficulty.—*Riolanus* in his *Anthropographia* mentions a child of 5 years old, who loſt his *tongue* in the ſmall-pox, but not the *Uvula*, and ſpoke almoſt as diſtinctly as before.—And *Monſ. Juſſieu* has recorded, in the *Mem. de l'Acad. Roy des Sciences*, a wonderful caſe of a girl, who cou'd ſpeak very articulately though ſhe was born without a tongue, and had only a tubercle or ſmall carnous ſubſtance in its room.

tongue, when ſufficiently drawn out of the mouth, muſt be firmly held with a piece of cloth by an aſſiſtant, whilſt the operator paſſes the needle and ligature deep in its ſubſtance, or rather quite thro' it, making as many ſtitches as he finds neceſſary: after which, it will be proper to hold medicines, almoſt continually, in the mouth, of a ſubaſtringent and vulnerary nature, which alone may be ſufficient to heal ſmall wounds of this part: and indeed *Hildanus* ſays, he cured a girl of a very large tranſverſe wound of the tongue, without ſtitching, by a gargariſm of this kind, ſweetened with *Syrup. e Roſis ſiccis*; ordering her to hold frequently in her mouth ſome of the ſame ſyrup, or that of *quinces*. The patient ſhou'd live upon a ſoft liquid diet, not requiring maſtication, and have his body kept duly open with laxatives. (*a*)

History from *Hildanus*.

(*a*) See what *Monſ. Pibrac* ſays in his diſſertation upon the abuſe of *ſutures*, in wounds in general, and upon this in particular, in the 3d vol. of the *Memoirs of the Royal Academy of Surgery*.

Of

Of wounds of the *Thorax*, and its contents.

How the *Thorax* is environed, and the parts it contains.

THE cavity of the *Thorax* is circumſcribed by the *Sternum*, the twelve *vertebræ* of the back, the *ribs*, the *clavicles*, the *intercoſtal muſcles*, and the *diaphragm*, which part divides it from the cavity of the *abdomen*, and is ſituated in an oblique direction, conſiderably lower poſteriorly than anteriorly; conſequently the *Thorax* is more capacious behind than before: and the whole cavity is lined with the *pleura*, which is a reflected membrane, making two complete bags, in which are contained the two lobes of the lungs, lying in the two lateral cavities of the *Thorax*; and theſe two bags, united by *cellular* membrane, form the *Mediaſtinum*, which is connected to the *Sternum*, dividing the *Thorax* into two parts. There is alſo a poſterior *Mediaſtinum*, which adheres to the *ſpine*, where runs the *Œſophagus*

phagus and *Aorta*. Theſe *ſepta* prevent a communication of fluids between the cavities. The *Thorax* contains the lungs, the heart in its bag called *Pericardium*, part of the *Œſophagus* and *Trachea*, and the *thoracic duct*, or canal running from the *Receptaculum Chyli*, as will be deſcribed. (*a*)

Wounds of the *Thorax* divided into three claſſes.

WOUNDS of the *Thorax* may properly be divided into three ſorts. 1. thoſe of the teguments and muſcles, or containing parts. 2. thoſe which penetrate the cavity without hurting its contents. 3. thoſe in which the contained parts alſo ſuffer; of all which we ſhall treat in order.

The firſt claſs.

THE wounds of the firſt claſs are known by inſpection, by ſearching with the finger, probe or bougie, by obſerving no air diſcharged from them, by the immediate return of a proper injection; as barley-water with honey, or ſome ſuch ſoft inoffenſive liquor: and ſhou'd the wound penetrate, what remains of the injection in the cavity, may be abſorbed by the bibulous

(*a*) The *Receptaculum Chyli* and *Ductus Thoracicus* were diſcovered by *Pecquet*, and by him demonſtrated at *Paris* in 1651 or 1652.

lous veſſels, opening upon the ſurface of the parts, without doing any injury.

In all theſe trials, in order to diſcover the penetration of the wound, we muſt not forget, to place the patient in the ſame poſture he was, when he received it; for otherwiſe, a piece of *cellular* membrane, or other ſubſtance, may fall in the way, obſtruct the paſſage, and fruſtrate our examination.

Treatment of wounds of the firſt claſs,

We have not much reaſon to fear a diſappointment, in the cure of inciſed wounds upon the teguments, &c. of this part; though the continual and neceſſary motion of the *Thorax*, in reſpiration, may a little retard the cure; and on account of this motion, ſtitching a wound on this part is not adviſable; as the ſtitches might ſoon break out, leaving the wound in a worſe condition, as we have remarked before; but the *dry-ſuture*, or ſtrips of common plaſter, properly applied, may be of uſe, by preventing in ſome meaſure, a receſſion of the lips of the wound.

How to treat a deep, oblique punctured wound.

In caſe a wound is made by an oblique thruſt of a weapon, and penetrates deep, without entering the cavity of the *Thorax*, we are by no means to obſtruct the egreſs of the matter, by cramming into the orifice tents or hard doſſils; but on the contrary, we are to promote it, by removing all impediments, by enlarging the aperture, if it is too ſmall, and by endeavouring to gain a depending opening; but when this important point cannot be obtained, we muſt uſe expulſive compreſſes, and an eaſy well adapted bandage, after dreſſing the wound with a ſoft vulnerary balſam, &c. aſſiſting ſuch meaſures all we poſſibly can, by a favourable poſition of the body, that a collection of matter may be prevented; which, when lodged near the *pleura*, may eaſily erode it, and diſcharge itſelf into the cavity, cauſing an *Empyema*.

Belloſte and *Magatus* to be conſulted.

The general rules in the treatment of wounds, are to be obſerved in theſe caſes. *Belloſte* and *Magatus* plainly ſhew the pernicious effects of tents; and have eſtabliſhed a rational practice from experience,

ence, in the management of wounds, now univerſally approved: though in ſome particular circumſtances, a tent may have its uſe, as we ſhall ſhew, eſpecially when made hollow. (*a*)

The methods of diſcovering whether a wound penetrares the cavity of the *Thorax*.

In order to diſcover, whether a wound penetrates the cavity of the *Thorax*, we are 1. to conſider the kind of inſtrument, the figure of it and its direction, when the wound was given, with the poſture the body was then in, comparing the ſize of the external part of the wound with the weapon, how far it is bloody, &c. 2. we are to ſearch with the finger, probe or bougie, as has been directed; remembering to place the patient in the poſition he was, when he received the wound; otherwiſe the obſtacles before mentioned, or a change of ſituation of the muſcles, may

(*a*) Though *Belloſte* has done good ſervice to Surgery, in exploding the uſe of tents in general; yet, in his *Hoſpital-Surgeon*, he ſeems to have run into the other extreme, in the ſuperficial dreſſing of *abſceſſes* at the firſt opening.

may obſtruct the introduction of any inſtrument uſed in the exploration of the wound, and not admit the entrance of the injection. 3. we are to obſerve, whether air comes out of the orifice forcibly enough to move the flame of a candle held to it, upon the patient's inſpiring as much as he is able, and making as ſtrong an effort in expiration. This experiment indiſputably proves the penetration of the wound, ſhou'd the flame of the candle be moved, under which circumſtance, the air will ſometimes move through the aperture, cauſing a noiſe in the cavity, and more ſo, when the lungs are wounded in an adheſion of them to the *pleura*; in which caſe, an injection wou'd excite a cough, and might be conveyed by the *Trachea* into the mouth. When the air is obſtructed, and cannot find a paſſage out, it may inſinuate itſelf into the *cellular* membrane, puffing that up to a great degree; though this *emphyſematous* ſwelling is more likely to proceed from an internal wound by a fractured rib; of which there are ſeveral inſtances upon record; but none ſo very extraordinary as that related

by

by Doctor *Hunter*, which he favoured me with a narrative of, before it was publiſhed; and under his direction the patient was ſaved, by inciſions in various parts, bandage, &c. as appear in the ſecond vol. of the *London medical Obſervations and Inquiries*; which aſtoniſhing caſe ſhou'd by all means be attentively read.

In penetrating wounds of the *Thorax* the *Prognoſis* is doubtful.

When we have aſcertained the penetration of the wound into the cavity of the *Thorax*, there is reaſon to fear the contents of it may be injured; therefore at firſt, the *Prognoſis* muſt be doubtful; but ſhou'd no ſymptoms appear of any of the contained parts being wounded, or blood or air contained in the cavity, we are to treat the wound according to the general rules, but dreſſing ſeldomer than common is adviſable in this caſe.——When we have any indication, that air has entered the cavity through the wound, we muſt firſt attempt the expulſion of it; for a ſmall quantity, by rarefaction, may compreſs the lungs, and obſtruct their expanſion; cauſing great difficulty in reſpiration, and interruption to the circulation

How to betreated when the contained parts are not injured, &c.

What is firſt neceſſary to be done when air has entered the cavity.

of

of the blood, which ſymptoms may deceive us in our judgment, without particular attention, and make us apprehenſive there is blood to be evacuated; and conclude, from this conſideration, that it is proper to keep the wound open; as *Muys* ingenuouſly confeſſes he did, and kept his patient ſome weeks under his care, when he might have cured him in a few days, had he been well acquainted with the cauſe of his ſymptoms.——The method recommended for expelling the air out of the *Thorax* is, to make the patient inſpire, as much as he poſſibly can, keeping the wound cloſe covered; then to uncover it immediately after this full inſpiration, deſiring him inſtantly to make a powerful effort, as in expulſion of the *fæces*. By this means, the included air may be driven out at the orifice, unleſs change of poſition of a muſcle, or ſome other obſtacle, ſhuts up the paſſage. This proceſs is to be repeated, as often as ſhall be found neceſſary, to clear the cavity of the air that had found admiſſion through the wound; whence the propriety of dreſſing,

Method recommended to expel the air out of the *Thorax*.

ſing but ſeldom, and other requiſite precautions, to exclude the air at the time of dreſſing, in a caſe thus circumſtanced, are obvious.——*Boerhaave*, by this method, cured an *Engliſh* Gentleman in a ſhort time, under ſuch circumſtances, when his life was deſpaired of.

Boerhaave's authority for this practice.

In a penetrating wound, though the *viſcera* of the *Thorax* are unhurt, yet veſſels may be divided, and pour blood into the cavity; therefore great attention is to be paid to the reſemblance of ſymptoms, in order to determine the true cauſe, from whence they proceed; as the operation, eſſentially neceſſary, when blood is there confined, might prove of fatal conſequence to the patient in the contrary caſe, by the admiſſion of more air.

Of great conſequence to know whether blood or air confined in the *Thorax*, produces the difficulty of breathing, &c.

The principal ſign of blood being contained in the cavity of the *Thorax*, is a difficulty of breathing; but the difficulty is leaſt when the patient is in an erect poſture, becauſe then the lungs have moſt ſpace for expanſion: the eaſieſt poſture

Signs of blood in the *Thorax*.

next to this, is lying on his back: it is very uneaſy for him to lie on the wounded ſide, and he cannot bear to lie on the ſound ſide, the weight of the fluid reſting upon the heart, lungs and *mediaſtinum*; and if blood is lodged on both ſides, he can lie on neither, but on his back only, with any tolerable eaſe; and in an erect poſture, he is often ſenſible of a weight upon the *diaphragm*, with ſome fluctuating motion of a fluid.

The conſequences of blood confined in the *Thorax*.

Respiration and the circulation of the blood will be greatly affected by this cauſe, and the extravaſated fluid being agitated and heated, ſoon acquires a ſtate of putrefaction, and may then erode and corrupt the *pleura*, lungs, *mediaſtinum*, *diaphragm*, *pericardium* and heart itſelf; therefore we are to endeavour to evacuate it, as ſoon as poſſible, in order to prevent ſuch dreadful conſequences; or what may proceed from an abſorption of ſuch a putrid fluid into the maſs of blood.——We muſt not truſt to medicines alone for the cure, as *Maſſa* propoſes; nor to nature's performing it, as mentioned by others, though many

instances are to be met with in Obſervators to this purpoſe. —— Profeſſor *Monro* ſpeaks of a Gentleman, who was wounded in a duel, and had the ſymptoms of blood lodged in the *Thorax*; which vaniſhed upon the evacuation of a conſiderable quantity of bloody matter with his urine.——

History from Profeſſor *Monro.*

Swammerdam relates a ſimilar caſe, in which the patient voided blood with his urine and was cured.——*Fabricius ab Aquapendente* mentions ſuch a caſe, in which the Surgeons had reſolved upon opening the *Thorax*; but at that juncture, the patient voided a large quantity of blood by the urinary paſſages, which diſcharge removed all his complaints.——*Glandorpius* ſpeaks of ſuch a caſe.——*Nicolaus Novocomenſis* gives a narrative upon the caſe of his friend, who was cured by a bloody evacuation by ſtool, in a penetrating wound of the *Thorax.*

History from *Swammerdam.*

From *Fal. ab. Aquapendente.*

From *Glandorpius.*

From *Nicolaus Novocomenſis.*

NOTWITHSTANDING the inſtances which ſhew, that nature unaſſiſted ſometimes performs cures by extraordinary ways and means, it is incumbent upon us, to uſe all the rational methods of aſſiſtance, that

Nature to be aſſiſted by all rational means.

our

our art teaches, in theſe threatening caſes, in order to obviate the deſtruction of the vital parts, by the confinement of a putrid fluid; or that which will ſoon become ſo.

When the wound is ſituated in the lower part of the *Thorax*, the patient is to be placed in ſuch a poſition, as makes it moſt depending, to facilitate the evacuation of the fluid; and when obſtructed by the lungs, we muſt preſs them back with ſome proper flat inſtrument, by which means, if the blood or matter is thin it will run, or be in a manner pumped out, by the action of the lungs in reſpiration; but if the orifice is ſmall, we muſt enlarge it; and ſhou'd the blood be coagulated, it will be proper to inject ſome reſolvent liquor, as warm barley-water, or pectoral decoction, with honey, to render it fluid and fit to be evacuated. When it does not paſs off readily by theſe means, ſome Authors recommend the uſe of a ſyringe, to abſorb it by ſuction; but this method is not much to be relied on.——*Dionis*, in his operations of Surgery, mentions the caſe of one of the Duke of *Burgundy's Gendarme's*, who had re-

Poſition of the body eſſentially neceſſary, &c.

Hiſtory from *Dionis*.

ceived a thruſt with a ſword under his right breaſt, to whom he was called ſoon after the accident, and dilated the wound ſufficiently to evacuate the extravaſated blood without introducing any thing into it. He obliged the patient to lie conſtantly upon it till the next day, when he found the cavity of the *Thorax* perfectly emptied of the blood, and the *hæmorrhagè* ſtopped; after which, the patient was cured by ſuperficial dreſſing, and returned to do duty in the army.

A very ſingular caſe.

I WAS lately deſired by Mr. *Talbot*, a Surgeon of character at *Wymondham*, to viſit a boy with him, about 13 years of age, who, three days before, fell from the top of a barn, upon a ſharp plough-coulter, which made an oblique wound, cutting through ſome of the ribs; beginning near the *axilla*, and ending at the bottom of the *Sternum*, juſt above the inſertion of the *Diaphragm*. By this horrible wound the left cavity

See *Belloſte* and *Le Dran* concerning penetrating wounds of the *Thorax*; and *Lanfranc*, *Guido*, *Paré*, *Fab. ab Aquapendente*, *Horſtius* and other Obſervators.

cavity of the *Thorax* was wholly expoſed to view, ſhewing that lobe of the lungs, the *Diaphragm*, and the heart in the *Pericardium*, all in motion. I viſited him a ſecond time, ſeven days after, and again viewed theſe parts with aſtoniſhment, conſidering all the circumſtances: now the whole lobe of the lungs appeared in a mortified ſtate, without any air entering it, at leaſt we cou'd not diſcover any degree of inflation, and the motion of the heart and *diaphragm* was very languid; but ſtill he lived two days longer, which made twelve after the accident, and then ended a miſerable life, in the moſt agonizing death, having his ſenſes to the laſt moment.

What ſteps are proper to be taken when the wound is in the ſuperior part of the *Thorax*, having blood fallen upon the *Diaphragm*.

When the wound is in the ſuperior part of the *Thorax*, and the blood has fallen upon the *Diaphragm*, which may be depreſſed by the weight of it, there is no poſſibility of its being evacuated by the wound. In this caſe it is abſolutely neceſſary, to make an opening at the back part of the *Thorax*; allowing the other to cloſe as ſoon as it will. The eligible part for making this inciſion, if we can number the ribs, is

between the third and fourth of the falſe ribs, counting from below upwards, and about five inches from the *ſpine*, more or leſs, according to the ſize of the patient; if we went lower, we ſhou'd be in danger of wounding the *diaphragm*, or the abdominal *viſcera* (*a*); by making the inciſion higher up, there wou'd not be a convenient depending opening obtained, for the diſcharge of blood or matter; nearer the *ſpine*, we ſhou'd cut the *dorſal* muſcles, and run the hazard of wounding the *intercoſtal* arteries; and were the opening farther from it, the patient wou'd be obliged to lie in an uneaſy poſture, to promote the diſcharge of the fluid. If the patient is fat, and the parts *emphyſematous*, or otherwiſe ſwelled ſo that we cannot reckon the ribs, by bending his arm and placing his hand upon his breaſt, and then meaſuring four inches from the inferior angle of the *ſcapula*, and about five from the *ſpine*, we ſhall come pretty near the place already deſcribed.

HAVING

(*a*) *Ruyſch* mentions a caſe in which a Surgeon, not being acquainted with the ſituation of the *Diaphragm*, penetrated the *Abdomen* inſtead of the *Thorax*, in attempting to perform this operation.

When and how the operation is to be performed.

HAVING fixed upon the place, and finding reaſon to think the veſſels have done bleeding, by the ſtrength and equality of the patient's pulſe, and warmth of his extremities, the operation is to be thus performed. Place the patient in a good light, and convenient poſture, which is leaning a little forward, and inclining to the oppoſite ſide; then mark the part preciſely with a pen and ink, and make an inciſion about an inch long, between the ribs, and parallel to them, rather nearer the lower, than the upper rib, to avoid the *intercoſtal* artery, which runs in a groove in the inferior edge of the rib; lay the *intercoſtal* muſcle bare firſt; and then divide it cautiouſly, making a ſmall opening through the *pleura*; and if the lungs do not adhere to it, they will then immediately recede, by the admiſſion of the external air; giving room to enlarge the opening, as much as ſhall be thought neceſſary, without hazard of wounding them: and ſhou'd they adhere to the *pleura*, they muſt be gently ſeparated with the finger, to give room for the diſcharge of the fluid. The adheſion is ſeldom ſo ſtrong, as not to admit of ſeparation in that manner.

ner. Shou'd the lungs happen to be slightly wounded in the operation, little danger is to be apprehended, in consequence of such an accident. After the opening is made sufficiently large, the patient's posture is to be altered into that, which is most favourable for the evacuation of the blood or other fluid contained; assisting the expulsion of it by the efforts of respiration. When this is done, in order to preserve a free discharge, a flat hollow tent, properly made of lead, with ears, and covered with common plaster, may be introduced, after dipping it into the balsam mentioned in Pag. 144; dressing the wound, in other respects, according to the general rules, applying easy compress and bandage; the napkin and *scapulary* are commonly used in these cases, but a piece of flannel, properly hollowed where it passes under the arms, having suspensory pieces to go over the shoulders, is preferable to any other bandage, in all disorders of the breast, as it yields to respiration.——When the quantity of the matter discharged is small, and of a good consistence, the tent is to be

Position of the body, and the dressing necessary after the operation.

left

left out, and the wound dreſſed ſuperficially.

Regimen, &c. to be obſerved.

BLEEDING, laxatives and an exact regimen, are of the utmoſt conſequence to be obſerved in theſe caſes, after the operation, as well as before; but if the patient has loſt a great quantity of blood, or is of a weak conſtitution, then bleeding muſt be omitted, or uſed with great caution and very ſparingly, leſt we ſink the patient too much by that evacuation. Vulnerary decoctions, ſoft balſamic medicines, &c. may be uſed to advantage on theſe occaſions; a variety of which are to be found in practical Writers: and if the patient is diſturbed with a cough, recourſe muſt by all means be had to opiates occaſionally.

WE

Hiſtories.

Tulpius tells us of a perſon, who had a tent ſhut up in his *Thorax* ſix weeks, which was then voided by the mouth; and that the patient recovered.——*Hildanus* relates ſuch a caſe, in which the tent was expelled by coughing.——*Fab. ab Aquapendente* gives an inſtance, that proved fatal, by a tent remaining in the *Thorax*.——Some Surgeons diſapprove of all kinds of tents after the operation.——*Monſ. Petit*, inſtead of a tent, recommends a piece of cloth, cut with a kind of tail, to be introduced, after being dipped into ſome vulnerary balſam.

What is proper to be done when we find the veſſels are not cloſed up n performing the operation.

We have proceeded to the performance of this operation, upon a ſuppoſition of a quantity of blood extravaſated in the *Thorax*, and that the wounded veſſels were cloſed: however, ſhou'd it prove otherwiſe, we may endeavour to conſolidate them, by mild aſtringent, balſamic injections, repeating bleeding according to the patient's ſtrength, obſerving the preceding rules. Nothing elſe can be attempted to any purpoſe, but much more is to be feared than hoped, under theſe circumſtances.

Circumſtances neceſſary to be regarded.

If a perſon has received a thruſt with a ſword or other weapon, quite through the *Thorax*, in a direction that makes this operation unneceſſary, both orifices at the time of dreſſing muſt not be opened at once; becauſe ſo much air might then enter, as when rarefied by the warmth of the part, might expand and compreſs the lungs, cauſing ſuffocation: hence it is always proper to have the circumambient air made warm, at the time of dreſſing wounds that penetrate the breaſt, as the admiſſion of it in that ſtate, will not produce ſuch effect. For the ſame reaſon, it ſhou'd be ſo contri-

ved,

ved, that the patient may inſpire pure, freſh air in his room, to procure a free expanſion of his lungs, in order to expel that, which may be collected in the cavity. In this point, we muſt conſider the ſeaſon of the year, and the degree of heat or cold, to regulate this important matter, which in general is not enough attended to.

The laſt ſpecies of wounds of the *Thorax*.

Signs of the lungs being wounded.

We now come to the laſt ſpecies of wounds of the *Thorax*, in which the *Viſcera* are injured.—When the lungs are expanded they poſſeſs the greateſt part of this cavity, conſequently are moſt in the way of being wounded; the ſigns of which are a frothy, florid blood diſcharged by the wound, and by the mouth, attended with coughing.—— When a wound in this part is deep, and any conſiderable veſſel belonging to it opened, we muſt not expect ſucceſs; ſmall wounds of it may be cured, but even ſuch muſt be looked upon as dangerous, and the event very precarious, were it only on account of the penetration of the wound into the breaſt. (*a*)

See Pag. 101.

What

(*a*) Many teſtimonies might be produced of cures in wounds of the lungs, as well as in thoſe only penetrating the *Thorax*, from Obſervators of the beſt authority, as *Ruyſch*, *Tulpius*, *Fallopius*, *Horſtius*, *Aræus*, *Schenkius*, *Belloſte*, &c.

The treatment of wounds of the lungs.

WHAT we have to do in wounds of the lungs, is to keep the veſſels empty by repeated veneſection, to make the circulation more languid, that leſs blood may be poured out by the divided veſſels; giving them an opportunity of collapſing and uniting; and aſtringent, balſamic, incraſſating, and pectoral medicines, by injection as well as otherwiſe, are recommended. Laxatives by the mouth, or by way of clyſter, to keep the body moderately open, muſt not be omitted. Soft, cooling diet muſt be kept to, avoiding all heating and ſtimulating things. A ſtrict obſervance of the Non-naturals in every reſpect ſhou'd be injoined; keeping both body and mind as quiet as poſſible, which attention is of the utmoſt conſequence, when we are endeavouring to ſtop the effuſion of blood, and conſolidate the veſſels. Under theſe circumſtances, the prudent uſe of opiates are of infinite ſervice, eſpecially when the patient is diſturbed with a cough, as generally happens.

The treatment of the wound itſelf.

CONCERNING the treatment of the wound in general, what we have already ſaid

ſaid, in reſpect to penetrating wounds of the *Thorax*, is direction ſufficient; and in this caſe, the operation for the *Empyema* may oftener be found neceſſary.——Shou'd a part of the lungs protrude, appearing in a livid or mortified ſtate, it is to be cut off. *Roſcius* ſays, in his epiſtle to his friend *Hildanus*, that he ſucceeded thus in ſuch a caſe; but his ſurgery was formidable indeed, the operation being performed with a red hot knife, through an abſurd notion which prevailed in his days, that an *hæmorrhage* wou'd be prevented by it. (*a*)

What is to be done when part of the lungs protrudes.

Hiſtory from *Roſcius*.

A WOUND penetrating either ventricle of the heart, the *aorta* or *vena cava*, will produce almoſt the ſame appearance, as a great and impetuous flux of blood; but this flux will be greater and the blood more florid, when proceeding from the heart or *aorta*, than when it comes from the *vena cava*. Palpitation of the heart, cold

What is to be done when the ventricles of the heart *aorta* or *vena cava* are wounded.

See Pag. 110.

(*a*) Vid. *Hildani Opera, Cent.* 2. *Ob.* 32.

Vid. *Tulpium in obſervat. med. lib.* 2. *cap.* 18. *de vulneribus cordis.*

cold ſweats, univerſal paleneſs, &c. are the forerunners of death. All that is to be done under theſe melancholy circumſtances, when the vital powers are near aboliſhed, were a Surgeon preſent, wou'd be to ſtop the wound up cloſe with ſome ſoft ſubſtance; making ſtrong preſſure upon it, as it may ſometimes be of great conſequence, to prolong the patient's life, tho' only for a few minutes.

The treatment of ſuperficial wounds of the heart.

When we have reaſon to believe the wound of the heart is only ſuperficial, the caſe is to be treated, as has been adviſed in wounds penetrating the *Thorax*. There are hiſtories of cures in theſe caſes, dangerous as they are, to encourage our perſeverance in all rational means, and hope for a happy event. Upon this occaſion, *Bartholine*, *Schenkius*, *Paré*, *Van Swieten's* commentaries upon *Boerhaave's* Aphoriſms, the *Miſcellanea curioſa*, *&c.* may be read. (*a*)

(*a*) *Rodericus a Veiga* relates the ſtory of a deer, which was killed in hunting, in whoſe heart was fixed a piece of an arrow, that appeared to have been there ſome time.

WHAT has been ſaid in Pag. 110, 11, 12, 13, and 14; a d 332, 3, 4, 5, concerning wounds of the *Œſophagus*, *Trachea* and *Bronchia*, makes it unneceſſary to take any farther notice of them here.

Of the *thoracic duct*, &c.

See Pag. 345.

As there is ſuch a cloſe connection between the *Thoracic Duct* and Receptacle of *Chyle*, it may give clearer ideas to mention them, and the management of their wounds together, though their reſidence is in different regions. This reſervoir is ſupplied by the lacteals, ariſing out of the villous coat of the inteſtines, after paſſing through the meſenteric *glands*, collecting an additional fluid from thence. It is ſituated at the ſide of the *Aorta*, near the ſuperior meſenteric artery, between the laſt *vertebra* of the back and firſt of the loins. The *Thoracic Duct* or canal runs from it along the *ſpine*, between the *Aorta* and *Vena Azygos*, as far as the fifth *vertebra* of the back, where it paſſes behind the *Aorta*, aſcending to the left ſubclavian vein, into which it empties the *chyle*. In two ſubjects I have ſeen a double *Thoracic*

Duct,

Duct, which *Luſus Naturæ* is worth bearing in mind, as will appear preſently.

Signs of the Receptacle or *Duct* being wounded.

THE ſigns of a wound in the Receptacle or *Duct*, are the diſcharge of a greyiſh white fluid, the patient ſhrinking and becoming daily weaker, being deprived of nutrition, though he takes food. Sometimes, after having taken aliment, the diſcharge of this chylous fluid is not only increaſed, but appears whiter.

Treatment of wounds in theſe parts.

IT is rational practice to preſcribe ſubaſtringent, and balſamic injections, with a view of conſolidating the wound, keeping the patient ſtrictly to a ſoft, nutritive diet, ſo ſparingly as but juſt to ſupport life; and in caſe there ſhou'd be only a ſmall puncture in the Receptacle or *Duct*, or only one of the branches of the *Duct* wounded, when it happens to be double, this treatment of the patient may ſucceed; otherwiſe wounds in theſe parts muſt be deemed fatal, without reſource. (*a*)

THE

(*a*) *Langelottus in Epiſtola ad Thomam Bartholinum* mentions the caſe of a Nobleman to this purpoſe.——Vid. *Boneti Sepulchret. Lib.* 4. *Sect.* 3.

Of the *Diaphragm*, &c.

See Pag. 112.

THE *Diaphragm* is a muſcle of the greateſt importance in reſpiration, as we have obſerved; conſequently when wounded that compound motion muſt be rendered difficult and painful, under which circumſtance, the patient endeavours to perform, or facilitate its action, by raiſing the ribs. If we conſider the ſtructure, origin and inſertion of it, with its neceſſary motion, the reaſon of theſe appearances will be very evident. Beſides the laborious and painful reſpiration, the patient is generally ſubject to a cough, attended with a fever, and often with ſuch ſymptoms, as accompany a *phrenitis*. The *phrenic* nerve is derived from the *cervicals*, whence alſo branches are ſent to the *deltoid* muſcle, and the top of the ſhoulder; which nervous communication will enable us to account for the patient's complaining of pain in thoſe parts, when the *Diaphragm* is affected. (*a*)—— I have ſome where read of a *Gladiator*, who died laughing, in conſequence of a wound in this part.

(*a*) See what Profeſſor *Monro* ſays in his diſſertation upon the nerves at the end of his *Oſteology*, concerning their communication and ſympathy, in reſpect to the ſymptoms attending injuries of the *Diaphragm*, the liver, and other *Viſcera* connected with that muſcle.

Of the nature and treatment of wounds of the *Diaphragm.*

ACCORDING to the general opinion of Writers, wounds in the tendinous parts of the *Diaphragm* always prove mortal; but there are inſtances of thoſe who have recovered of wounds in the fleſhy parts of it.—In theſe caſes, we muſt firſt endeavour to ſtop the flux of blood, if it is to any conſiderable degree, repeating *veneſection* occaſionally, and injoining a ſtrict regimen, with the obſervance of the rules directed in penetrating wounds of the *Thorax.*——In order to promote the agglutination of the wound, mild balſamics may be injected; taking all poſſible care to obtain a depending opening, that the blood, matter, or injection, may have as free and uninterrupted an egreſs as poſſible; and treating the wound in all other reſpects according to general directions, uſing embrocations, fomentations, and cataplaſms, &c. as pain and tenſion of the *abdomen*, &c. and the urgency of the ſymptoms, may require.

Hiſtory from *Glandorpius. Spec. Chirurg.*

Glandorpius ſays he cured a wound in the carnous part of the *Diaphragm*; but cou'd not ſucceed, when his patient was wounded in the tendinous part of it.

Hollerius

Hollerius pronounces the latter incurable, but not the former; ſaying, he obſerved in a man, who was executed, and diſſected in the phyſic-ſchools, a *cicatrix* in the fleſhy part of the *Diaphragm*. From *Hollerius*.

Alexander Benedictus ſpeaks of a ſoldier, that was perfectly cured of ſuch a wound. From *Alexander Benedictus*.

It is not poſſible to determine, with preciſion, concerning the event, in wounds of the *Diaphragm*; therefore we ſhou'd be cautious in our preſage. Shou'd we heal the wound externally, dreadful conſequences might follow, from ſome of the *abdominal viſcera* inſinuating themſelves even into the *Thorax*, through the wound.——*Bonetus* has a collection of ſuch examples; and *Paré* relates the caſe of a Captain, who was ſhot through the fleſhy part of the *Diaphragm*; and though the wound was apparently healed, yet the patient complained of a diſorder in his ſtomach, and of pain like the cholic: eight months after, the pain became very violent, and he died in a ſhort time. His body was opened by *Guillemeau*, a man of great eminence, bred under

The *abdominal viſcera* may inſinuate themſelves into the *Thorax* through the wound.

A remarkable caſe from Paré.

Paré, who found part of the *Colon* in the *Thorax*, which had paſſed through the wound of the *Diaphragm*.——I once ſaw a body opened, wherein part of the ſtomach had paſſed, through a breach of the *Diaphragm*, into the *Thorax*; but had no opportunity of knowing the circumſtances of the caſe, during the patient's life.

A caſe in which part of the ſtomach was found in the *Thorax*.

In a wound of the *Mediaſtinum*, the patient complains of pain immediately under the *Sternum*, to which it is attached. In order to judge, whether this part has ſuffered, the depth the weapon entered, and the direction of it, are to be conſidered. This is the leaſt dangerous part to receive a wound in, of any in the *Thorax*. Wounds here are to be treated according to general rules. (*a*)

Signs and treatment of wounds in the *Mediaſtinum*.

The *Pericardium* is a very ſtrong membranous bag, incloſing the heart, and lying looſely

Of the *Pericardium*, cure of its wounds, &c.

(*a*) Some Authors recommend trepanning the *Sternum* in collections of matter, &c. in the *Mediaſtinum*. I think Baron *Haller* mentions a ſingular caſe of this kind in a *Dutch* Divine.

looſely over it, connected to it only at its baſe, and to the great veſſels, that enter it there; it lies in contact with the *Diapragm*, with the flat ſide of the heart upon it, and is cloſely connected with the *Mediaſtinum*: however, wounds of the *Pericardium*, for obvious reaſons, muſt be deemed much more dangerous, than thoſe of the *Mediaſtinum*.——In order to form our judgment, in reſpect to a wound in this part, we are well to conſider its ſituation, the nature of the weapon, by which it was inflicted, with other circumſtances.——It is to be treated according to the rules preſcribed in penetrating wounds of the *Thorax*, &c.

Benivenius mentions the caſe of an *abſceſs* formed in the *Thorax*, which, upon being opened, diſcovered an eroſion of the *Pericardium*, and ſome part of the heart bare; yet the patient recovered. Hiſtory from *Benivenius*.

Cardanus, in *Comment. Aphoris. Hippocratis*, ſays he ſaw ſome portion of the *Pericardium* taken away, and the patient cured. From *Cardan*

Hiſtories from *Galen*.

UPON the authority of *Galen*, *Marulus*, the ſon of *Mimographus*, was cured after removing ſome of the putrid *Pericardium*, and leaving the heart expoſed to view.——The ſame Author relates a caſe, in which he removed part of a carious *Sternum*, found the *Pericardium* in a putrid ſtate, and part of the heart naked.——Some years ago I cured a perſon, after taking away about three inches of the whole ſubſtance of two ribs; in which caſe I cou'd plainly diſcover the *Pericardium*; and the pulſation of the heart threw the matter out at the opening.

Obſervation.

Miſcellaneous Hiſtories,

MANY Writers have taken notice, of adheſions of the *Pericardium* to the heart.—Doctor *Hunter* told me, he had obſerved a total adheſion; and that he once found a great collection of purulent matter in the *Pericardium* of a child. He gave me an hiſtory of a ſoldier's caſe, who died ſuddenly, as he was walking over *Berwick* bridge; upon opening whoſe body, the *coronary* arteries were found ruptured, and the *Pericardium* full of blood.——*Bonetus* relates a caſe, in which the *Vena cava* was ruptured, and the *Pericardium* filled with blood.

Of

Vid. *Bohnium de Thoracis Vulneribus lethalibus.*

Of wounds of the *Abdomen* and its contents.

Of the *Abdomen*.

THE cavity of the *Abdomen* is divided from the *Thorax* by the *Diaphragm*, and lined with the *Peritonæum*; which is a reflected membrane, from whence are derived the external coats of the *inteſtines* and *abdominal viſcera*, as the ſame coats, inveſting the *thoracic viſcera*, are from the *Pleura*.

Diviſion of the *Abdomen*.

THE upper part of the *Abdomen* is called *Epigaſtrium*; the two lateral cavities, *Hypochondria*; about three inches above and below the navel is termed the *umbilical*, and the loweſt the *Hypogaſtric* region, which extends to the *Pubes*.

Parts contained in the *Abdomen*.

THE parts contained in the *Abdomen* are, the ſtomach, ſmall and great inteſtines, the *meſentery*, connecting and confining them in their places; the *Omentum*, *Liver*, *Gall-bladder*, *Spleen*, *Receptaculum Chyli*, *Aorta*

Aorta descendens, *Vena cava*, and *Pancreas*; and the *Kidnies* with the *Ureters*, may be looked upon as situated here, though, strictly speaking, they are not contained within the cavity. (*a*)

Wounds of the *Abdomen* divided into three kinds.

WOUNDS of the *Abdomen* may properly be divided into three kinds, as were those of the *Thorax*. 1. those of the teguments, muscles and containing parts, not penetrating the cavity. 2. those which penetrate the cavity, without wounding the *viscera*. 3. those wherein the *viscera*, or any of the contents of this part, are injured.

The first kind.

THE first kind is known by the eye, by examination with the finger, probe or bougie; considering how the weapon was directed, with the length it entered, and by injections. In all these expedients, to discover the nature of the wound, we must never forget to place the patient, in the same posture he was when it was inflicted, if

(*a*) See Doctor *Stukeley's* beautiful and accurate plate of the human *Viscera*, in his Anatomy of the Elephant, published with his excellent Lecture upon the *Spleen*, &c. in the year 1723.

if this can be learned from him, or any perſon preſent. It is more difficult to diſcover a penetrating wound of the *Abdomen*, than of the *Thorax*, eſpecially in corpulent people, on account of the great quantity of fat upon that part; and the muſcles being more moveable, a ſmall alteration of the poſition of the body may prove a great obſtacle to the introduction of a probe of any kind, and deny the admiſſion of an injection. We ſhou'd conſider every ſymptom and circumſtance, to direct our judgment in this momentous point; and when we are fully aſſured, that the wound does not penetrate the cavity, we are to treat it according to the general rules, laid down in the management of wounds; remembering, if it is a deep inciſed wound, though not quite to the *peritonæum*, that it is of the utmoſt conſequence to endeavour to form a very ſtrong *cicatrix*, to reſiſt the dilatation of that yielding membrane againſt the preſſure of the *viſcera*, and prevent the formation of a *Hernia*, in conſequence of ſuch a wound; on which account it is adviſable, by all means, to inſiſt upon the patient's

tient's wearing an eaſy compreſs and bandage, for ſome time after the wound is healed.——As deep and large inciſed wounds here are very apt to produce *Herniæ*, ſo deep and extenſive punctured wounds, without judicious care and management to obtain ample depending openings, may ſoon degenerate into ſinuous ulcers, hard to cure; of which we may be convinced, by conſidering the ſtructure of theſe parts, with the great quantity of *adipoſe* and *cellular* membrane in them, where compreſſion muſt loſe much of its power and effect; having no ſubjacent bone, to aſſiſt this means of uniting them; which was remarked by *Celſus*: and upon this occaſion, we may conſult *Tulpius*, *La Motte*, and other Obſervators.——*Sennertus* relates a ſingular inſtance of the dilatability of the *peritonæum*, occaſioned by a blow, which a pregnant woman received, at the bottom of her body; in conſequence of which, a ſmall tumor appeared ſoon after the accident, but as the *fœtus* grew, and diſtended the *uterus*, both together made their way into the *peritoneal ſac*; out of which, after making inciſion,

History of an extraordinary dilatation of the *peritonæum* from *Sennertus*.

ciſion, the *fœtus* was taken alive, in the preſence of the relator.——*Tulpius* gives a narrative of a ventral *Hernia* proceeding from a wound, and which, being neglected, cauſed the patient's death, ſix years after the wound was cured.

Of the ſecond kind of wounds of the *Abdomen*.

A PENETRATING wound of the *Abdomen* will generally be diſcovered, by the means we have propoſed; but to put the matter beyond all doubt, when the wound is large, there will commonly be a protruſion of the *omentum*, *inteſtines*, or other of the *abdominal viſcera*: and when aliment, chyle, bile, fœces or urine is diſcharged, we cannot heſitate a moment in pronouncing the penetration of the wound; and the part injured will be declared, by theſe reſpective evacuations.—Shou'd the ſymptoms be favourable in a penetrating wound, without extreme pain, tenſion, inflammation, fever, fainting, &c. or any ſuch diſcharge, as mentioned above, we have good reaſon to believe none of the *viſcera* are hurt (*a*). In this caſe, we are firſt to endeavour

The treatment of ſuch wounds.

(*a*) *Wiſeman* and *Muys* teſtify, that people have been pierced through the body without having the *inteſtines*, or any of the *viſcera*, wounded.

deavour to expel the air out of the cavity, as was directed in penetrating wounds of the *Thorax*, excluding it as much as poſſible during the cure; following the general method directed in the treatment of wounds, by ſtitching or otherwiſe, according to the circumſtances. Great Practitioners differ in their ſentiments concerning the uſe of *Gaſtroraphy*, which will be deſcribed preſently. Some are of opinion, that it is better to omit ſtitching entirely; but there are caſes requiring the practice too evidently, to doubt of its propriety. Whether ſtitching is practiſed or not, the patient muſt be kept wholly confined to his bed, and in ſuch a poſition of his body, that the *viſcera* may not preſs forcibly againſt the wound; yet with ſuch an inclination, as may beſt favour the diſcharge of the matter, dreſſing the wound gently with even pledgets of lint, dipped into ſome warm vulnerary balſam, ſuch as has been mentioned, and a plaſter of *Cerat album*; before the application of which, embrocating the whole *Abdomen* well with warm oil may prove very beneficial, in preventing tenſion, &c. The compreſs

Difference of opinion concerning the uſe of *Gaſtroraphy*.

compreſs and bandage ſhou'd be ſoft and eaſy, and the bandage made with flannel, as directed in wounds of the *Thorax*, is adviſable for the ſame reaſon. It is much better to have it in that manner, and to be fixed by pinning or lacing, on the ſide oppoſite to the wound, than in the form of a roller; the application of which is more troubleſome, nor can it be made to preſs ſo equably. This kind of bandage is likewiſe preferable after tapping. The repetition of the dreſſing is to be governed, by the diſcharge of the wound, and other circumſtances, as the prudent and judicious Surgeon ſees occaſion. Invariable rules cannot be preſcribed; but when nothing forbids it, ſeldom dreſſing is found moſt conducive to the cure.——The patient muſt ſubmit to a ſpare, liquid diet, have his body kept open, and loſe blood occaſionally, as fever, inflammation, &c. ſhall indicate; having a proper regard to his conſtitution, and cuſtomary way of living, as was hinted in the general account of the treatment of wounds: and a ſtrict obſervance of all the non-naturals ſhou'd be attended to, throughout the cure, which are ſtill more eſſential-

ly

ly neceſſary to be regarded, when any of the *viſcera* have received an injury, by being expoſed to the air, or in any other manner.

What is to be done when the *inteſtines* protrude.

When the *inteſtines* protrude, and are not injured, they are to be reduced immediately, if poſſible, by gradually and gently preſſing them in with our fingers; but when wounded, the *glover's ſuture* muſt be uſed, leaving three or four inches of the ligature out of the wound: and when they have been out, and expoſed to the air for any conſiderable time, it is neceſſary, firſt to foment them with ſome emollient liquor, moderately warm, as milk and water with a little oil, freſh meat broth, &c. but ſhou'd the orifice be ſmall, and the ſtricture great upon them, by reaſon of their being diſtended with air, &c. ſmall perforations with an awl have been adviſed by *Paré* and others; but I cannot ſpeak to this practice from my own experience (*a*). It may

(*a*) Doctor *Low* of *Glaſgow* recommended puncturing the *Hernia inteſtinalis*, with a view of evacuating the air, and facilitating thereby the reduction of the *inteſtine*; and the late celebrated *Chandos* Profeſſor at St. *Andrews*, Doctor *Simſon*, approved his method.

may be better to follow *Celſus's* advice, as I have occaſionally done, who ſays. " *Si* " *anguſtius vulnus eſt quam ut inteſtina com-* " *mode refundantur, incidendum eſt, donec* " *ſatis pateat.*" (*a*) In order to enlarge the wound, we muſt carefully introduce a very ſmall director, to avoid injuring the *inteſtines*, and then paſs a ſlender curved knife, with a blunt point, in the groove of the director, firmly held againſt the *peritonæum*, whilſt we are dilating the wound, as far as ſhall be found neceſſary, to admit of their reduction with eaſe; but when there is room gained for the introduction of the finger, that will prove the beſt and ſafeſt guide to paſs the knife upon: other inſtruments have been uſed and invented by ſome Surgeons; but this ſeems to be the beſt method of dilating the wound. Shou'd the ſtricture be found ſo great and unequal, according to the nature and difference of the wounded parts, as that the director cannot, without violence, be introduced directly into the cavity at once, we muſt do it, by cutting

(*a*) Lib. 7, Cap. xvi. *de ventre ictu perforato.*

cutting gradually, after having firſt endeavoured to obtain ſome liberty, by drawing the *inteſtine* gently farther out: and ſhou'd we meet with an inſuperable difficulty in paſſing the director, from the ſtricture at its entrance, we may ſlip a little way under the edge ſome very thin, ſmooth inſtrument made of wood, cutting upon it with the point of a common inciſion knife; and having thus gained ſufficient room for the finger or director, proceed, with the blunt-pointed knife, to finiſh the inciſion; keeping the *inteſtine*, during this operation, as warm as poſſible with a flannel ſtupe. Firſt of all, before we begin the dilatation of the wound, we muſt be mindful to place the patient in a ſuitable poſition, with his hips a little elevated, in order to facilitate the reduction or falling back of the prolapſed body, when the wound is dilated; for the natural tendency downwards of the parts within the *Abdomen*, together with the action of the *Diaphragm* and other muſcles, may not only much obſtruct the return of the prolapſed body, but throw more *inteſtines* out, when the ſtricture is removed. As ſoon as we have ſufficiently enlarged the wound,

wound, we muſt reduce the *inteſtine*, if in a proper condition to be returned into the body, by gradually preſſing it in, as much as we can in the order it came out; and then ſhake the body in various directions, with a view of ſettling it in its natural ſituation. *Monſ. Arnaud's* precaution is not amiſs, as mentioned by *Garengeot*; which is, to be careful we do not thruſt the *inteſtine* between the *muſculus rectus* and its *aponeurotic* ſheath, which does not cloſely adhere to it, inſtead of putting it into the *Abdomen*, when the wound is near the *Linea alba* below the navel.

The meaſures to be taken when the *Omentum* protrudes with or without an *inteſtine*.

If the *omentum* is fallen out of the wound, remaining in a condition to be returned with ſafety, which may be known by its moiſture, warmth, and degree of redneſs, denoting vitality, it is to be done ſpeedily; but when the *inteſtine* protrude at the ſame time, it will be proper to reduce it firſt, that it may more readily fall into its true ſituation; beſides it will bear compreſſion better than the *omentum*; which is a ſoft adipoſe ſubſtance, and will

be more eaſily returned after the *inteſtine*, without the danger of injuring it. Shou'd it be grown cold, hard and ill coloured, which change may ſoon happen in a body of ſuch texture and compoſition, when expoſed to the external air and ſtrangulated, the common practice has been, to paſs a ligature about it, and cut off the putrid or mortified part with knife or ſciſſars, about half an inch from the ligature. A better way of performing this operation appears to be, by paſſing a large needle through the middle of the part, with a double flat ligature or very narrow tape, tying the ſeparate parts of it oppoſite ways, only moderately tight, leſt they ſhou'd cut through ſuch a tender ſubſtance, and fruſtrate the intention of ſtopping the *hæmorrhage*, that might probably enſue; leaving a ſufficient length of them out of the wound, when the ſound part of the *omentum* is placed juſt within the lips, ſuffering it there to reſt, and the ligatures to digeſt off, without uſing any force to ſeparate them; at the ſame time, endeavouring to preſerve an opening at the inferior part of the wound, for the evacuation of any fluid, that may collect in the

cavity.

cavity.——*Garengeot*, upon his own authority, as well as that of other eminent Surgeons, diſapproves the ligature, adviſing excíſion of the altered part of the *omentum*, returning the ſound as has been directed.—*Foreſtus* gives a hiſtory of a fatal *hæmorrhage*, in conſequence of excíſion, without making a ligature, on this occaſion.—Theſe conſiderations ſhou'd make us the more attentive to the ſtate of the part, and appearance of the veſſels in it, in order to determine the propriety or impropriety of the ligature ; for they may retain a circulating power, when the ſoft ſubſtance of the *omentum* is corrupted. (*a*)

How the wound is to be treated after the prolapſed body or bodies are replaced.

AFTER the prolapſed body or bodies, ſound or injured, are thus returned, the wound is to be treated, as has been directed in penetrating wounds of the *Abdomen* without protruſion of *inteſtine* or *omentum* ; and ſhou'd it be thought adviſable, to lay pledgets gently down to the bottom of the

(*a*) See what *Verdier* and *Pipelet* ſay upon this ſubject, in the 3d. vol. of the *Mem. de l'Acad. de Chirurgie*, and *Pouteau* in his *Melanges de Chirurgie*.

wound, it is a neceſſary precaution, to tie threads unto them, to prevent their being loſt in the cavity. Under ſome circumſtances a hollow tent, made with thin ſheet lead covered with plaſter, may be found uſeful, by allowing a more free and uninterrupted diſcharge of matter, that may collect in the cavity; and I have experienced its uſefulneſs in ſimilar caſes.—Though ſome modern Writers abſolutely forbid the uſe of tents in penetrating wounds of the *Abdomen*, as well as of the *Thorax*, yet this point, from the nature of the circumſtances, muſt be left to the Surgeon's diſcretion, who will not forget endeavouring to make the wound as much depending as poſſible, by poſition of the body or otherwiſe: and when there is great tenſion, &c. of the *Abdomen*, fomentations, embrocations, and cataplaſms, of the emollient and diſcutient kind, may prove very beneficial, and ſhou'd by no means be omitted.

Of

In reſpect to the uſe of tents, ſee a note in *Heiſter*, in the chapter upon *Gaſtroraphy*, And relative to this ſubject, may be read *Petit's* eſſays, *ſur les epenchemens dans le bas ventre, en Mem. de l'Acad. de Chirurg.* Tom. 1. 2.

Of *Gaſtroraphy*.

THE ſuture called *Gaſtroraphy*, or ſtitching the belly, which we are about to deſcribe, is in a great meaſure exploded. It is indeed quite uſeleſs in ſmall wounds; but neceſſary in thoſe of large extent in all directions; more particularly when they are inflicted tranſverſely in the inferior part of the *Abdomen*, in order to prevent the falling out of the *inteſtines*, &c. which they are very apt to do, by their own gravity and the compreſſive force of the muſcles.

Two methods of performing *Gaſtroraphy*.

THERE are two methods of practice in performing *Gaſtroraphy*. The one, is no more than the common interrupted ſuture, only it muſt be made with a curved needle of the largeſt ſize, and a flat ligature, or tape in proportion, taking good hold of the parts, to prevent its breaking out, obſerving, that the *peritonæum* and muſcles correſpond, and that they be pierced with the needle at the ſame diſtance from the edges

of the wound; making ſuch a number of ſtitches, as the length of it requires, and leaving a ſpace of about an inch between ſtitch and ſtitch.

The ſecond method, or the quilled ſuture.

THE other method of ſtitching the belly is called the quilled-ſuture, becauſe quills were formerly uſed in performing this operation; but rolls of plaſter, plaſter rolled round wax-candle, or large pieces of common bougie, are preferable to quills; for they may be better adapted to the parts, and will lie eaſier upon them.

The beſt method of performing this future.

THE moſt ſimple and ready way of making this kind of ſuture is, to paſs double ligatures in one needle, in order to include the rolls at one end, and be tied upon them on the oppoſite ſide with bow-knots, which will give an opportunity of ſtraitening, or looſening the ligatures occaſionally, with very little trouble. After paſſing in as many ligatures, as the extent of the wound demands, the lips of it are to be gradually brought together, and kept ſo, by a judicious aſſiſtant, when ſuch a neceſſary perſon

can

can be had ; the rolls are then to be carefully adjuſted, that their bearing may be exact, regular and eaſy, tying the ligatures as above deſcribed.

Treatment of the wound after this operation.

AFTER the performance of this operation, the wound is to be dreſſed with ſome vulnerary balſam, &c. embrocating the whole *Abdomen* well with warm *Ol. Olivar.* and applying compreſs and bandage, as has been directed ; placing the patient in a favourable poſture for the diſcharge of blood or matter, that may happen to be lodged in the cavity ; avoiding, as much as is conſiſtent with anſwering this neceſſary purpoſe, ſuch a poſition of the body, as muſt put the ſtitches upon the ſtretch at the ſame time ; ſtrictly injoining reſt, as motion is diametrically oppoſite to the preſent intention.

AUTHORS formerly directed, that a tent made with lint, having a thread tied to it, ſhou'd be introduced into the inferior part of the wound after ſtitching, though there were no evident ſigns of blood, or other fluid, to be evacuated out of the cavity ; but the

the ſuppoſition of ſomething being lodged there, is the only juſtification of the practice; for, as we have obſerved, tents may prove very detrimental by irritation of the ſenſible parts, cauſing pain, inflammation, &c. and protracting the cure; but ſhou'd a tent be found neceſſary to keep the part open, a hollow one, made as has been deſcribed; or a piece of bougie is far preferable to a tent made of lint, or other material, that will, by imbibing moiſture, ſwell in the wound, and obſtruct the egreſs of any fluid between dreſſing and dreſſing: and beſides preventing the inconvenience ariſing from the increaſe of ſize of any ſubſtance introduced, the bougie, when dipped into ſome ſoft balſam, will ſlip in readily, and reſt in the wound, with little or no uneaſineſs to the patient; but the compoſition uſed in preparing the bougie ſhou'd have no ſtimulating ingredient in it. We ſhou'd not forget to ſecure either, by a ligature, for fear of its ſlipping into the cavity. Our main buſineſs now is obviouſly to give a free diſcharge to whatever fluid is contained, and to promote digeſtion of the wound; endeavouring, as much as poſſible, to prevent or remove tenſion, inflammation,

fever,

fever, &c. The wound itſelf is to be treated as has been directed, and the ſame means uſed, to obviate or remove the ſupervening accidents, as bleeding, laxatives, emollient clyſters, ſtrict regimen of diet, &c. as have been adviſed in penetrating wounds of the *Abdomen*. By due attention to theſe general rules, *Albucaſis* ſays, he ſpeedily cured a very large wound, attended with a protruſion of a great portion of the *inteſtines*. And *Galen* ſpeaks of extenſive wounds in the *Abdomen* ending as happily, where the *omentum* protruded.

Hiſtories from *Albucaſis* and *Galen*.

Of wounds of the *abdominal viſcera* and their treatment, being the third kind of wounds of the *Abdomen*.

We now come to conſider more particularly, wounds of the *Viſcera* contained in the *Abdomen*, with the treatment of them. ——In our endeavours to diſcover them, we muſt always attentively take under conſideration the direction of the weapon, the length it entered, the natural ſituation of the *Viſcera*, the attitude of the body when the wound was given, and obſerve whether the contents of any of theſe *Viſcera* are evacuated by the wound. We ſhou'd alſo pay due attention to the pain, fever, inflammation,

flammation, ſyncope, &c. remembering, that a wound, in any of the *Viſcera*, generally occaſions an univerſal tenſion of the *Abdomen*. (*a*)

Situation of the ſtomach.

THE ſtomach is ſituated under the left ſide of the *Diaphragm*, juſt below the leſſer lobe of the liver, paſſing down a little way, and then turning over the *ſpine* to the right ſide; in ſhape much reſembling the pouch of a bag-pipe. It lies in an oblique direction from left to right, and has a ſubſtance called *meſogaſtrion*, in its concave part, between the orifices attaching it to the ſubjacent parts. Its ſuperior orifice, called alſo the *cardiac*, is on the left, and the inferior or *pylorus*, on the right ſide of this organ.

The means of diſcovering wounds of the ſtomach.

IN wounds upon the region of the ſtomach, beſides conſidering the direction of the weapon, and examining the length it penetrated, it is neceſſary to inquire, whether the patient's ſtomach was full or empty,

(*a*) Vid. *Bohnium de Abdominis Vulneribus in Renunciatione Vulnerum.*

ty, at the time the wound was received. We are then to obſerve, whether he has the ſymptoms, that commonly attend injuries done to this part, as ſickneſs, vomiting, ſingultus, languor, anxiety. If the weapon has entered the cavity of the ſtomach, dividing the veſſels, blood will be thrown up at the mouth, and probably the aliment will come out at the wound; if not, it muſt fall into the cavity of the *Abdomen*: violent pain enſues, the pulſe becomes languid, clammy ſweats ariſe, and the extremities grow cold. Theſe are the general ſymptoms; ſome, if not all, of which accompany wounds of the ſtomach; and in the *Diagnoſis*, they have been denominated mortal wounds, or ſuch as are incurable by art: yet, as we have obſerved, there being many ſurpriſing inſtances of ſucceſs in ſuch caſes, we are, after making a proper *prognoſtic*, to endeavour to aſſiſt nature all we poſſibly can.

Method of cure.

THE method propoſed to aſſiſt nature is, to repeat veneſection as often as the patient's ſtrength will allow, in order to prevent,

vent, or remove inflammation; to which membranous parts are very liable, and which may ſoon terminate in a mortification, without the greateſt attention to obviate it. The patient is to be kept to a ſoft diet, taking a very ſmall quantity at a time, to avoid diſtention of the ſtomach, which wou'd diſappoint nature's operation in the cure of the wound: we ſhou'd therefore endeavour to give ſome ſupport by the frequent repetition of nutritive clyſters, made thin, that they may be the more readily abſorbed, as well as by aliment taken at the mouth, in the cautious manner which has been directed; injoining a ſtrict obſervance of all the non-naturals, and confining him to his bed, lying upon his back. By paying a due regard to this method, a dangerous *hæmorrhage*, pain, fever, inflammation, &c. may be prevented, or removed, as far as the nature and circumſtances of the caſe will admit; and an opportunity given to the wound of uniting, and the fall of any thing into the cavity of the *Abdomen* hindered, which probably wou'd prove of fatal conſequence. (*a*)

SHOU'D

(*a*) The caſe Mr. *Atkinſon* communicated to the Royal Society on this occaſion, is very pertinent, and worthy of notice.

Of ſtitching the ſtomach.

Shou'd the wound in the ſtomach preſent itſelf to our view, it may be ſtitched, as has been directed when the *inteſtines* protrude wounded.——Some Surgeons have recommended ſtitching the ſtomach to the *peritonæum*.——*Vander Wiel* relates two caſes, ſo treated with ſucceſs: and *Purmannus* aſſures us, he has ſucceeded in this operation. However, when the wound does not offer itſelf to our view, the difficulty and danger of attempting to find it ſhou'd diſcourage our ſearch; under which circumſtance, the moſt rational method of treating the patient is that we have delivered: and whether the wound is ſtitched or not, it is to be managed as has been directed in other penetrating wounds of the *Abdomen*.

Stitching the ſtomach to the *peritonæum* recommended.

Hiſtory from *Glandorpius*.

Glandorpius relates a very memorable caſe from *Florianus Matthæſius* of *Brandenburgh*, of a man at *Prague*, who ſwallowed a knife 8 or 9 inches long, which, pointing at the ſuperior part of the ſtomach, he cut upon and extracted, ſeven weeks and two days after it was lodged in his ſtomach, and perfectly cured the patient.

Fallopius

From *Fallopius.*

Fallopius ſays he cured two perſons of wounds which penetrated the cavity of the ſtomach, though the aliment paſſed thro'.

From *Orthæus.*

Jacobus Orthæus tells us, that in the city of *Fuldana*, a ſoldier was wounded in the ſtomach; and that immediately upon taking food, it came through the wound: in which caſe, the ſtomach was ſtitched to the edges of the wound of the teguments, and cured by two judicious Surgeons, who affirmed the fact to *Orthæus*.

From the *Miſcellanea curioſa.*

In the *Miſcellanea curioſa*, is an account of a *fiſtula* remaining after a wound in the ſtomach, through which ſome of the aliment paſſed, the perſon living 11 years in that condition. (*a*)

A general view of the inteſtinal canal.

The ſmall *inteſtines* are about five times the length of the body, conſiſting of the *Duodenum*, *Jejunum*, and *Ileum*. The firſt is firmly fixed to the ſubjacent parts, by *cellular*

(*a*) *Albucaſis*, *Becherus*, *Veiga*, &c. mention cures of wounds in the ſtomach, through ſome of which the aliment was diſcharged.

cellular membrane, without having any *meſentery* annexed to it: it is continued from the *Pylorus*, paſſing under the *Colon* and then reflected over the *ſpine* to the left ſide. ——The *Jejunum* is a continuation of the *Duodenum*, taking its name where the *meſentery* begins; but it cannot be preciſely aſcertained, from any marks external or internal, where it ends, and where the *Ileum* begins; however, according to *Winſlow*, about 3-5ths of the whole length of both *Jejunum* and *Ileum* may be allowed the latter.——The *Ileum* enters the ſide of the *Cæcum*, which is the firſt of the great *inteſtines*, ſituated on the right, juſt above the *Os Ileon*, and, from its figure and pendent poſition, excrements and extraneous bodies are very apt to ſtop here, producing dreadful conſequences.—The *Colon* proceeds from the *Cæcum*, and paſſes winding over the *ſpine* to the left ſide, under the ſtomach and ſpleen, and cloſe to the kidney, where it goes over the brim of the *pelvis*, and turns into it; which turn is called the inferior ſigmoid flexure.—The *Rectum* begins where the *Colon* ends, and terminates at the

the *Anus*.——Having given this curſory view of the inteſtinal canal, the nature and treatment of the wounds in the different parts of it, may be better underſtood.

Of wounds of the ſmall guts, and their treatment.

The *lacteals* were diſcovered by *Aſellius* in the year 1622.

When the ſmall *inteſtines* are wounded, the digeſted aliment is commonly diſcharged at the aperture, and *chyle* with it, when the *lacteals* are divided; and ſhou'd the wound be in the *Duodenum* near the ſtomach, *bile* may be mixed with the other fluids; the *biliary duct* may alſo then be opened, as it thereabouts enters that *inteſtine*. In the *Duodenum* the excrements are

(*d*) Mr. *Clover* of the City of *Norwich*, a man of the greateſt ſkill in the diſeaſes of horſes, and of equal veracity, ſhewed me a ſtone weighing eleven pounds, which he took out of the *Colon* of an old horſe, that did his work well to the laſt, and died in good caſe. Upon ſawing the ſtone in the middle, it did not appear of the ſame ſolidity in every part; it was formed upon a ſmall fragment of a flint ſtone, which we found in the very centre ——This ſingular caſe brings to my mind, that of the *tubular* ſtone which was found in the *Aorta* near the heart of a great perſonage, as mentioned by *Piſo* in his 101 obſervation.——Stoney concretions have been found in various parts of the body, but more particularly in the *glandular*: I once obſerved them in the centre of the *glands*, after taking off a cancerous breaſt.

are thin, yellow and frothy, and not fetid; in the *Jejunum*, of a whitiſh or aſh color; and in the *Ileon*, viſcid with *mucus*. Theſe remarks may be of ſome uſe, to direct the judgment in reſpect to the part wounded.

Method of cure.

THE prognoſtic in theſe wounds is unfavourable, as we have demonſtrated; and they are claſſed among thoſe of a mortal nature, with ſome exceptions, by the moſt eminent writers, as we have ſhewn. When the *inteſtine* does, or does not protrude in ſuch wounds, they are to be treated as thoſe of the ſtomach. When a wound of the *inteſtine* comes not in view, we ſhou'd not ſearch after it, but rather endeavour to avoid expoſing the part to the air; by which the danger might be increaſed; as is exemplified in *Tulpius*, who blames a Surgeon for ſearching too far, in order to diſcover the extremities of a gangrened *inteſtine*.—*Varicola* tells us, of a young man, who ſhot himſelf into the *Abdomen*, and a few days after, voided the bullet by ſtool, and was cured without any bad accidents ſupervening.——*Hildanus* gives us the hiſtory of a

A proper caution.

Supported by the authority of *Tulpius*.

Hiſtory from *Varicola*.

From *Hildanus*.

perſon, who was wounded with a ſword in the *Abdomen*, the point of which breaking upon the thruſt, remained in his belly for a year, and was then expelled with his *fæces*.——*Monſ. Littre* mentions a perſon, who received ſeveral wounds in the *inteſtines*, and yet recovered.——*Bohnius* cites many Authors, ſhewing us, that nature does more than art, and effects cures in many inſtances, beyond our conception: but if wounds of the teguments and inteſtines are large, it may be found very neceſſary to perform the glover's ſuture upon the one, and *Gaſtroraphy* upon the other, as has been deſcribed. The glover's ſuture is to be made ſpirally with a fine triangular-pointed needle, paſſing it at ſmall diſtances, and with all poſſible exactneſs, leaving ſome inches of the ligature out of the wound.

Of the treatment of wounds in the large *inteſtines*.

When the large *inteſtines* are wounded, preſenting themſelves in that condition, they require ſtitching, and are to be treated, in all reſpects, as wounds of the ſmall *inteſtines*; only, when they are wounded, and do not protrude, ſo as to admit of ſtitching

ing, we muſt be very cautious in the injection of clyſters, unleſs the wound be out of their reach, as the liquor may eſcape into the cavity of the *Abdomen*, and produce much miſchief. The *Cæcum* is a bad part of the inteſtinal canal to receive a wound in; as from its pendulous ſituation, whatever happens to be contained in it in conſequence of ſuch an accident, or any indurated *fæces*, have to riſe againſt their own gravity by the periſtaltic motion.—Upon opening the Duke of Berwick's body, it is ſaid a ball was found lodged in this part.

What meaſures are to be taken when the ſmall *inteſtines* are totally divided.

In a total diviſion of the ſmall *inteſtines*, in the ſuperior parts near the ſtomach, the event muſt prove fatal, unleſs both ends can be ſtitched together, by which there is ſome chance of ſaving the patient; however, ſhou'd there be no poſſibility of bringing the lower extremity of the *inteſtine* to the other, which is apt to fall down into the cavity, all that can be attempted, in this caſe, is to ſtitch the ſuperior part to the edges of the external wound; which operation is related to have been done with

Authorities to encourage the attempt to make an artificial *Anus*.

ſucceſs, in the *Acta Eruditorum Lipſiæ*, when there was length enough of *inteſtine* from the ſtomach, furniſhed with *lacteals*, for the abſorption of *chyle*, neceſſary for nutrition of the body.——*Monſ. Littre* ſpeaks of ſeveral ſuch caſes, and *Monſ. Mery* of one, in which artificial *Ani* were made by this method.——I have ſeen one that remained at the navel in conſequence of an *Exomphalos*, the patient living many years after; and once I had in view the making one in the *inguen*, on account of a mortification, which attended a *Hernia* there, as related in my Caſes and Remarks in Surgery; but nature, aſſiſted by art, perfected a cure beyond expectation. From what I obſerved in this caſe, and ſome others, it appears to me very rational practice, when we are called, and find the parts in that ſtate, which does not admit of the operation for the *Bubonocele*, to open the tumor directly, in order to remove the ſtricture, and then treat the diſeaſe as a mortification in any other part.——The caſe related by Mr. *Jamieſon*, in the 1ſt vol. of the *Med.*

A hint that may be worthy the conſideration of Surgeons, when a *Hernia* is attended with a mortification.

See my Caſes & Remarks in Surgery, 2d Edit.

Eſſ.

Eſſ. alſo encourages this practice, and demands particular attention. (*a*)

Of the *meſentery*, and treatment of its wounds.

THE *meſentery* is a duplicature of the *peritonæum*, connected by *cellular* membrane, expanding and receiving the guts as in a ſling. It begins looſely upon the loins, extending to all the *inteſtines*, except the *Duodenum*; but that part of it, which belongs to the great guts, is called *meſocolon*. It prevents the *inteſtines* from twiſting, and keeps them in their proper places; it ſuſtains the arteries, veins, lympheducts and nerves, in their paſſage to and from the *inteſtines*, as has been obſerved; therefore wounds in this part may be attended with great *hæmorrhages*, and other dangerous ſymptoms. They are to be treated, as has been directed in penetrating wounds of the *Abdomen*.

Of the *Omentum*.

THE *omentum* is attached, at the anterior part, to the arch of the *Colon*; poſteriorly,

(*a*) *Hollerius*, *Paré*, *Jacotius*, *Glandorpius*. *&c.* furniſh us with many inſtances of cures in wounds of the *inteſtines*.

to the ſtomach; and laterally, to the *Spleen*, *Duodenum*, &c. It is an exceeding fine membrane, floating upon the *inteſtines*, larded with fat, and reſembling an apron, with beautiful branches of veſſels like network.

How to be treated when wounded.

When the *omentum* is wounded, and part of it prolapſed, appearing moiſt, warm and reddiſh, ſhewing that the circulation of the blood is not ſtopped in it, beyond a probability of being again put in motion by the warmth of the body, it is to be returned again into the *Abdomen*; but what we have ſaid, upon its prolapſion with the *inteſtines*, makes it unneceſſary to add any thing more here concerning wounds of this part. (*a*)

Of the *Liver*.

The *Liver* is a large irregular body, of a tender texture, vaſcular, and glandular. It

(*a*) *Glandorpius* has a very memorable caſe of a wound in this part, received by a Nobleman in a duel. *Speculum Chirurg.*——*Galen*, *de uſu partium*, ſays, the uſe of it is to keep the ſubjacent *Viſcera* warm; and he inſtances the caſe of a Gladiator, who, having loſt a great part of it, was ever after obliged to wear ſomething to keep the *Abdomen* warm.

It is ſituated under the arch of the *Diaphragm*, lying in contact with it, in the right *Hypochondrium*, extending to the left. Its ſuperior ſide is convex; its inferior concave. It derives its external covering from the *Peritonæum*, whence proceed, on its convex ſide, three ligaments, attaching it to the *Diaphragm*.

Signs of wounds of the *Liver*.

THE ſigns accompanying a wound in the *Liver* are, a great effuſion of blood, tinctured with *bile*, when it penetrates far into its ſubſtance; the patient complains of ſickneſs and anxiety; ſometimes vomits blood, ſometimes bile, and ſometimes diſcharges blood by ſtool; the *Abdomen* grows tenſe and painful, and the pain frequently extends quite to the neck, inflammation and fever ſucceed; and when cold, clammy ſweats come on, attended with *ſyncope*, and coldneſs of the extremities, they are to be conſidered as the harbingers of death.

The treatment of the wound

AFTER having conſidered the nature and ſituation of the wound in this bowel, all that art can do to aſſiſt nature in the cure,

cure, is, by endeavouring to ſtop the *hæmorrhage*; bleeding repeatedly as the patient's ſtrength will bear; keeping his body open, by the moſt lenient purgatives, or clyſters, injoining the ſtricteſt regimen, reſt, &c. treating the wound according to the general rules obſerved in penetrating wounds of the *Abdomen* with an effuſion of blood, and making ſuch applications to the whole *Abdomen*, as the pain and tenſion ſhall require, and as already have been directed: but deep wounds in this part muſt determine us to preſage an unhappy event, though there are upon record inſtances, well authenticated, of ſome cures having been performed.——*Glandorpius* ſays, he cured a youth of a large wound in the liver.——*Scultetus* relates ſuch a cure.——*Hildanus* mentions a caſe, that ended happily, though the ſymptoms were very ſevere, where a piece of the liver was found at the mouth of the wound, ſeparated by a ſword.—But the moſt memorable example of all, is that recorded in the *Mem. de l'Acad. Roy. des Sciences*, for the year 1705, if I do not miſtake the year, of a lunatic, who

Examples of cures of wounds of the *Liver*.

who inflicted eighteen wounds upon himſelf, eight of which penetrated the cavity of the *Abdomen*; the *Liver*, the *Colon*, and the *Jejunum* ſuffering; yet, by frequent bleeding, a ſtrict regimen, dreſſing ſeldom, &c. he was cured of the wounds and recovered his ſenſes; but relapſing about a year and half after, he laid violent hands upon himſelf, which gave the opportunity of knowing what parts were wounded by opening the body.

Of the *Gall-Bladder*, and ſigns of its being wounded.

The *Gall-Bladder* is of a pyriform figure, and ſituated on the inferior ſide of the great lobe of the liver, and its duct opens into the *Duodenum*. Shou'd it happen to be full of bile when wounded, ſome of that fluid may be evacuated externally by the aperture, leaving no room to doubt, what part has been injured, eſpecially when but little blood is diſcharged with it; though it is more likely it ſhou'd fall into the *Abdomen*, where, as it is the moſt acrimonious fluid in the body, it may ſoon occaſion very ſevere ſymptoms; and for want of its being thrown into the *inteſtines* to ſtimulate them

them to an excretion of their contents, a fatal conſtipation may prove the conſequence of that defect.

The treatment of a wound in this part.

THE treatment of the wound itſelf, and of the patient, in all other reſpects, differs very little from what has juſt been mentioned concerning wounds of the *Liver*; but unleſs we can make a depending opening in the *Abdomen* for the evacuation of this acrid liquor, we have reaſon to apprehend, all our endeavours will be in vain.—The diſſertations of *Monſ. Petit*, relative to this matter, and other extravaſations in the *Abdomen*, in the 1ſt and 2d vol. of the *Memoirs of the Royal Academy of Surgery*, deſerve to be read with particular conſideration and attention, to direct our judgment and aſſiſt our practice.

Hiſtory of an extraordinary caſe from our *Philoſ. Tranſ.*

THE following fatal, and very pertinent, caſe, was communicated to our Royal Society. An Officer received a wound in the inferior part of the *Gall-Bladder*, without the adjacent parts ſuffering any conſiderable injury; but the conſequent ſymptoms were

were very ſurpriſing; the *Abdomen* was immediately diſtended, as if the patient had been afflicted with an *Aſcites* or *Tympanites*, which inflation continued till his death, about a week after he received the wound. He had no eructations, or *borborygmi*, and his bowels remained obſtinately conſtipated all the while he lived, purges and clyſters having no effect; and though conſiderable doſes of opiates were given, they procured little or no eaſe. The external appearance of the wound was pale, crude and flaccid; on the fifth day he complained of a *nauſea*, and had a ſlight hiccup; his pulſe was ſtrong, equal and ſlow, till the day before he died, then intermitted a little, but his ſenſes were perfect even till death cloſed the miſerable ſcene. (*a*)

Of the *Spleen*.

THE *Spleen* is an oblong, flat body of a livid color; its ſubſtance is ſoft, and texture very looſe; it lies in the left *Hypochondrium*, in contact, on its ſuperior ſide which

(*a*) See a caſe in my Caſes and Remarks in Surgery, in which 68 biliary concretions were diſcharged at an abſceſs, formed juſt beneath the falſe ribs. Edit. 2d.

which is convex, with the *Diaphragm*, and its inferior ſide reſts upon the ſtomach, colon and kidney.

Wounds in this part to be treated as thoſe of the *Liver*.

THERE is no material difference in the conſequences of a wound in this organ and of one in the *Liver*. It is not quite ſo dangerous in its nature, but requires to be treated in the ſame manner, in general, as a wound in the *Liver*.

IT is unneceſſary to add any thing here, concerning wounds of the *Aorta Vena cava*, and other large blood-veſſels belonging to this region, after what has been ſaid in Pag. 108, 365.

Of the *Pancreas*.

THE *Pancreas* is a long flat, conglomerate gland, ſituated behind the ſtomach, lying acroſs the *Spine*, between the *Liver* and the *Spleen*; its excretory *duct* opens into the *Duodenum*, with the *Ductus communis choledochus*. (*a*)

Want criteria to aſcertain its being wounded.

WE have no criterion to inform us, with certainty, when this part is wounded; our judgment

(*a*) Vid. *Regnerum de Graaf de Succo Pancreatico*, with a beautiful figure of the *Pancreas*, and its *Duct* opening into the *Duodenum*.

judgment can be only conjectural, founded upon general rules, as an obſervance of the direction of the weapon, &c. but a wound by which the *duct* of this gland is opened, muſt be deemed very dangerous; becauſe the fluid that ſhou'd paſs through, and be diſcharged into the *Duodenum*, will fall into the cavity of the *Abdomen*. Wounds in this part require only the general treatment.

Particular regard to be paid to a cough when it attends wounds in the *Abdomen*, &c.

In wounds in any part of the *Abdomen*, or its contents, as well as in the *Thorax*, &c. if a cough attends the patient, it demands particular notice, and muſt be removed, or alleviated all we poſſibly can, by pectoral and balſamic remedies, with the aſſiſtance of opiates, as the urgency of the ſymptom requires; becauſe the action of coughing oppoſes every intention of cure.

Of the *Kidnies*.

The kidnies are glandular organs, appointed to ſeparate the aqueous with the ſaline parts from the blood, and are ſituated, as has been obſerved, in the lateral cavities of the *Abdomen*, the right, under the great lobe of the *Liver*, and the left, under the *Spleen*; the right, from being preſſed upon by the *Liver*, is a little lower in its ſituation

ſituation than the left; at their ſuperior extremities, they are in contact with the *Diaphragm*, and reſt againſt the laſt ribs, and at their inferior, againſt the *Oſſa Ilium*, lying upon the tranſverſe proceſſes of the *Vertebræ Lumborum*, ſurrounded with a great quantity of adipoſe membrane, which makes ſoft beds for them to lie in: they are oblong flat bodies, 4 or 5 inches long, and 2 or 3 broad, having their convexity towards the *ſpine*; and their ſubſtance is pretty ſolid.

How wounds in them are to be diſcovered and treated.

Wounds of the kidnies are to be diſcovered, by conſidering their ſituation, and the general directions mentioned, relating to the exploration of wounds in the *Viſcera* of the *Abdomen*. They are attended with pain and tenſion of this region, ſometimes extending farther, and if the inſtrument, by which the wound was inflicted, penetrated the *Pelvis* of the kidney, urine will be evacuated by the wound, and blood mixed with it, through the *Urethra*. Theſe muſt be looked upon as dangerous wounds, but not ſo dangerous as thoſe of the other *abdominal viſcera*; tho', as we have obſerved, ſtrictly ſpeaking, they lie out of the limits

of

of the *Abdomen*. They are to be treated as wounds of thoſe parts, with the obſervance of general rules; and when the wound does enter into the *Pelvis* of the kidney, natural balſams, as *Balſ. e Copaib.* &c. may be beneficially taken, drinking *Aq. Calcis*, after the pain, inflammation and tenſion are off.—Three or four years ago, I was called, by an Apothecary, to an elderly Gentlewoman, who had long voided purulent matter with her urine, and found a very large abſceſs upon the region of the kidney, which had a communication with its *pelvis*; for, upon opening it, urine was diſcharged with the *pus*. Since this, ſhe has enjoyed better health, than for many years before, and the only inconvenience remaining is a ſmall diſcharge of matter externally, requiring no dreſſing but a piece of common plaſter.——*Fallopius*, *Dodonæus*, &c. relate hiſtories of cures in wounds of the kidnies.—Serjeant *Bernard's* narrative of Conſul *Hobſon's* caſe in the *Philoſ. Tranſ.* is well worth reading on this occaſion. The celebrated Profeſſor *Marchetti* of *Padua* performed the operation of *Nephrotomy*, with ſucceſs, upon this Gentleman,

Hiſtory of an abſceſs originally formed in the *Pelvis* of the kidney.

man, when he was Conſul at *Venice*. (*a*)

Of the *Ureters*.

THE *Ureters* are ſlender canals, running from the kidnies to the bladder, at the back of the *peritonæum*, without entering it; and after paſſing over the *Muſc. Pſoæ* in an oblique direction, they turn down into the *Pelvis*, continuing their courſe between the *Rectum* and the bladder; the *umbilical* arteries on one ſide, and the *vaſa deferentia* on the other, penetrating the bladder on each ſide the *Veſiculæ ſeminales*, making a triangle with the *Meatus urinarius*, commonly at the diſtance of about an inch.

How to diſcover wounds of the *Ureters* with their treatment.

WOUNDS of the *Ureters* are known by their ſituation, the direction of the inſtrument, &c. but it is difficult to diſcover them, and determine this point with preciſion; and it is ſcarce poſſible they ſhou'd be wounded, without injuring ſome other parts of conſequence. Theſe wounds are more

(*a*) See *Les cas ou Néphrotomie ſe fait avec ſucces par Monſ. Lafitte, en Mem. de l'Acad. Roy. de Chirurgie.* Tom 2. *Et Recherches hiſtoriques et critiques ſur la Néphrotomie, ou Taille du Rein.* Tom. 3. *par Monſ. Hevin.*

more dangerous, than even thoſe of the kidnies themſelves; for the urine muſt fall into the *Pelvis*, if not into the *Abdomen*, and produce fatal ſymptoms in a ſhort time, unleſs ſome way ſhou'd be pointed out to evacuate it. In theſe caſes we ſhou'd allow the patient to drink but a ſmall quantity of liquor, and that of the ſofteſt and moſt balſamic kind, void of any ſtimulating property, managing the wound in the ſame manner as wounds of the kidnies.

Though the following notes have no immediate connection with the ſubject, yet their ſingularity may render them acceptable.

In opening the body of a Gentleman lately, aged about thirty, who died hectical, ſome years after it was ſuppoſed he had been afflicted with true nephritic ſymptoms, and voiding a large quantity of pure blood by the urinary paſſages, I found one of the *ureters* impervious as a ligament, and much enlarged for a conſiderable ſpace from the kidney, with purulent matter, but no calculous ſubſtance, in its *pelvis* or in the bladder.——About the ſame time I attended the opening the body of another Gentleman, who died of a *Diabetes*, and had long been affected with violent hypochondriac complaints. Nothing was found obſervable in this body, but an incyſted aqueous tumor ſituated upon the ſuperior part of the left kidney, where the arteries, ramified upon the cyſt, were oſſified, ſhewing a gradation of the oſſification from a cartilaginous to a perfect boney hardneſs, which upon bending broke in ſome places and pierced the coats of thoſe veſſels. ——I alſo once ſaw oſſifications upon the ſurface of a *Placenta Uterina*.——See my Caſes and Remarks in Surgery, Edit. 2d.

Of wounds of the parts contained in the *Pelvis*.

Of the *Pelvis*, and its contents.

THE boundaries of the *Pelvis*, which contain the *Bladder*, *Rectum* and *Uterus* with its appendages are, forward the *Os Pubis*; backward the *Os Sacrum* above, the *Os Coccygis* below; laterally the *Ilia* above and the *Ischia* below. The *Bladder* lies in the lower anterior part of the *Pelvis*, upon the inside of the *Symphysis* of the *Os Pubis*; it is divided into neck, body and *fundus*, the latter of which is attached to the *Peritonæum* by a ligament. When the *Bladder* has but little urine in it, its *fundus* falls below the *Symphysis* of the *Os Pubis*; but when distended with urine, if it is not become rigid and unyielding, it rises considerably above it. Its upper part is covered with the *peritonæum*, whence it is reflected, and expanded over the anterior part of the *Rectum*; which expansion is formed into a kind of pouch, receiving part of the small *intestines*.

Signs and treatment of wounds of the *Bladder*.

WOUNDS of the *Bladder* are discovered, by considering the situation of the part, the direction of the weapon, and the depth it entered; and when it penetrates, urine is generally evacuated through the wound, which circumstance removes all doubt; and a wound here is almost always attended with pain in the region of the *pubes* and groins. It is more or less dangerous, according to the part of the *Bladder* that is wounded; if it is in the *fundus*, towards the posterior part of it, or in any other, where the urine, in consequence of the wound, must necessarily fall into the cavity of the *Abdomen*, it will inevitably prove mortal; as frequently happened in performing the high operation for the stone; on which account it was justly exploded, and certainly will not be practised again, except under particular circumstances. When the urine passes freely out of the *Bladder*, and does not fall into the *Abdomen*, we want not instances from *lithotomy* to evince, that wounds of this part are curable by the common treatment: and some Surgeons, when the wound is at the *fundus* of the *Bladder*, advise stitching the lips of

the wound and bladder together; as has been directed in wounds of the ſtomach and *inteſtines*, in order to prevent the falling of the urine into the *Abdomen*.—Profeſſor *Monro* ſays, that a ſoldier at *Sterling* was ſhot into his bladder, and the wound ſoon healed.—And Monſ. *Petit* relates the caſe of an Officer, that received a ſhot in this part, who ſeventeen years after was cut for the ſtone, and had the ball extracted, caſed over with calculous matter. (*a*)

Hiſtory from Profeſſor *Monro*.

From Monſ. *Petit*.

Of the *uterus* and its appendages.

BEFORE mentioning wounds of the *Rectum*, we may conſider thoſe of the *Uterus*; firſt curſorily taking notice of the ſituation and connexion of that body, and its appendages, in reſpect to the adjacent parts. After removing the contents of the *Abdomen*, thoſe of the *Pelvis* appear, and we have in one view, the *Colon* from the inferior ſigmoid flexure, the *Rectum*, and the *Bladder*, the *Uterus* lying between the two latter, with its appurtenances; as the *Ligamenta lata*, which are only doublings of the *Peritonæum*, through which the veſſels paſs to

(*a*) See what *Riverius*, *Glandorpius*, *Felix Wurtz*, *Caſparus Bauhinus*, &c. ſay upon this ſubject.

to the *Uterus*; the *Ligamenta rotunda*, that run along in a ſerpentine courſe, upon the upper edge of the *Ligamenta lata*, from the anterior corners of the *Fundus Uteri*, through the rings or ſheaths of the *Muſcul. obliq. extern.* and are then loſt in the cellular membrane of the groins; the *Tubæ Fallopianæ*, which ariſe from the corners of the *Fundus Uteri*, and are connected to the *Ligamenta lata*; the *Morſus Diaboli*, a jagged body, ridiculouſly ſo called, reſembling a fringe, at each extremity of thoſe tubes; and the *Ovaria* towards the back part of the *Uterus*. The *Vagina uteri* is of a ſpungy texture, having many *glands*, whoſe excretory *ducts*, called *Lacunæ*, open into the whole extent of its internal ſurface; it is placed between the *Rectum* and *Meatus urinarius*, and connected to them, by the univerſal connecting ſubſtance, the cellular membrane, all which paſſages have a degree of obliquity in their direction. The *Uterus* begins at the *Os Tincæ*, where the *Vagina* ends; it is ſituated at the bottom of the *Pelvis*, between the *Rectum* and the *Bladder*, as has been obſerved;

ſerved; and theſe parts are ſtrongly connected together, though left much at liberty, to allow of the neceſſary dilatation and contraction of each reſpectively, by the interpoſition of the *Peritonæum*, which paſſes over them, from the one to the other, giving them their external covering. (*a*)

The ſymptoms accompanying wounds of the *Uterus* and its appendages very analagous.

FROM the analogy of the ſymptoms, it is pretty hard to diſtinguiſh wounds of the *Uterus* itſelf, from thoſe of its appendages, in an unimpregnated ſtate, as has been remarked; but, even in this caſe, ſhou'd the weapon penetrate the cavity of the *Uterus*, ſome appearance of blood may be diſcovered through the *Vagina*, ſufficient to direct our judgment with preciſion. When it is diſtended with the *Fœtus*, wounds may be attended with ſuch an effuſion of blood, that nothing can ſave the patient but a ſpeedy extraction of it; under which circumſtance, the *Cæſarian* operation is adviſable, if it cannot be effected in any other manner; for after delivery, the *Uterus* ſoon contracts, the divided veſſels collapſe, and

(*a*) Vid. *Regnerum de Graaf de Mulierum Organis Generationi inſervientibus: Et Noortwyk de Utero humano gravido.*

and the *hæmorrhage* ſtops. Theſe wounds are to be looked upon of a very dangerous nature, and are to be treated according to general rules, like thoſe of the *Bladder*, &c. taking all poſſible care, in all of them, to prevent the falling of any thing into the cavity of the *Pelvis* or *Abdomen*. (*a*)

WOUNDS of the *Vagina Uteri* are not very dangerous; they are commonly attended with pain in the groins, *pubes* and *ſacral* region.——I have twice found large ſtones lying in ſuch a favourable poſition to be cut upon through the *Vagina Uteri* and neck of the *Bladder*, as to encourage me to proceed in that manner, preferable to any other;

Hiſtories of ſtones extracted out of the *Bladder* by cutting through the *Vagina uteri*.

(*a*) See two Memoirs by *Monſ. Simon* upon the cæſarian operation, in the *Mem. de l'Acad. Roy. de Chirurg.* and Doctor *Cyprianus's* letter to Sir *Thomas Millington*, M. D. upon the ſame ſubject.——Some years ago I examined the body of a woman, who had an *extrauterine fætus* extracted by piece meal at an abſceſs, opened in the *umbilical* region, long after the term of geſtation was expired. I found the parts that had ſuffered, perfectly healed, the woman enjoying a good ſtate of health, but ſhe had never ſince been pregnant. I received a very exact and circumſtantial account of this caſe from the woman, and the Surgeon who cured her.——*Albucaſis*, *Alexander Benedictus*, *Hildanus* and other Writers, have recorded hiſtories of caſes to this purpoſe.

other; and which gave the patients very little pain, either in making the wounds, or extraction of the ſtones. They were both cured in three weeks, with the happy conſequence of retaining their urine perfectly well.

Of the treatment of a wound of the *Rectum*.

SHOU'D the *Rectum* be wounded, and the *Bladder* at the ſame time, it may prove very difficult to cure ſuch a wound, on account of the urine falling continually upon it; as we ſee, when that accident happens in *Lithotomy*: but when the *Rectum* only is injured, and the wound can be eaſily come at, it readily admits of cure, as we obſerve after the operation for the *Fiſtula* in *Ano*; in which caſe, when *ſinuſes* extend too high, to be opened with ſafety, balſamic injections, &c. may be uſed to advantage.

THREE

Hiſtory of a ſingular caſe.

A Surgeon of the higheſt character told me, he once was concerned in a caſe, where the whole *Vagina* ſeparated in a mortification, as far as the *Os Tincæ*, the patient recovering beyond expectation.

Paulus, *Ætius*, *Benivenius*, *&c.* ſpeak of women who ſurvived the loſs of the *Uterus* itſelf.

See in my Caſes and Remarks in Surgery, the caſe of a dangerous *hæmorrhage* proceeding from a fungous excreſcence upon one of the *Nymphæ*.——Concerning exuberance of theſe parts, conſult *Heiſter* and *Mauriceau*; and on account of an incipient mortification there, *Solingen*, *de Morb. mulierum*.

A ſingular caſe of a *Fiſtula* in *Ano* cured.

THREE or four years ago, I was conſulted, in the caſe of a woman upwards of thirty years of age, whoſe health was much impaired, by the long continuance of a very bad *Fiſtula* in *Ano*. Her Surgeon had opened many *ſinuſes*, in different directions, and treated the caſe judiciouſly; but one remaining pretty high up the *Rectum*, tending directly towards the *Vagina Uteri*, and diſcharging an ill-conditioned matter immoderately, which he durſt not venture to open, perplexed him very much; on which account he deſired me to viſit her with him. By introducing my finger into the *Vagina*, and the probe into this *ſinus*, I found it terminated juſt above the *Carunculæ myrtiformes*: I propoſed drawing a *ſeton* through the *Rectum* into the *Vagina*, which was agreed to, and the operation eaſily performed, with an inſtrument a little more curved than a tonſil-needle, having an eye towards the point. It ſucceeded ſo happily, that the diſcharge was obtained, at this depending opening in the *Vagina*, with little or no inconvenience; and after continuing the *ſeton* about three

weeks,

weeks, it was left out, and the cure completed without any farther trouble. She ventured to marry ſoon after, and brought forth a healthy child in leſs than a year; ſince which ſhe remains perfectly well. (*a*)

Of the *Scrotum*, and the treatment of wounds in it.

THE compoſition of the *Scrotum*, is chiefly looſe ſkin, and *cellular* membrane without fat, which may be eaſily inflated with air; and is a ſoft bed for the tender *teſticles* to be repoſed in.——Wounds in this part require no peculiar management, and in general heal kindly. A bag truſs is the proper bandage, affixed to a waiſt-band, to receive and ſupport the part.——

Scarifications ſometimes uſeful in anaſarcous dropſies of this part.

In *anaſarcous* dropſies, the *cellulary* membrane here is ſometimes exceſſively loaded with water, diſtending the part to an enormous ſize; under which circumſtances, I have made ſcarifications ſeveral times with advantage, and without any bad accidents enſuing.

THE

(*a*) This caſe, with ſomething more upon the ſubject, is inſerted among my Caſes and Remarks in Surgery.

THE *Teſtes* are originally ſituated in the *Abdomen*, juſt beneath the *kidnies*, and gradually deſcend, near the time of birth, through the ſheath of the *ſpermatic* cord into the *Scrotum*, each carrying along with it a *peritonæal* coat, making the *Tunicæ vaginales*.—This anatomical diſcovery of Doctor *Hunter*, explains the nature of the *Hernia congenita*, or that ſpecies of rupture, where the *inteſtine* and *teſticle* are found in contact; which before cou'd not be accounted for, only upon a ſuppoſition of there being, at the ſame time, a laceration of the *Peritonæum*. (*a*)

The original ſituation of the *Teſtes*.

Hernia congenita now explained.

THE *ſpermatic* cord is compoſed of an artery, vein, nerve, lymphatics, *vas deferens*, the cremaſter muſcle, and aponeurotic membrane, derived from the opening of the *Muſ. oblig. extern.* They are connected

Of the *ſpermatic* cord.

(*a*) This diſcovery was made by Doctor *Hunter*, in the year 1755, aſſiſted by the diligent inveſtigation of his brother Mr. *John Hunter*, a very accurate and indefatigable Anatomiſt, and an excellent Surgeon; and it was demonſtrated by the Doctor, in his lectures, that year.——See Mr. *John Hunter's* obſervations on the ſtate of the *Teſtes* in a *Fætus*, and on the *Hernia congenita*, in Doctor *Hunter's* Medical Commentaries.

ted by *cellular* membrane; which alſo makes the ſheath of the cord, and through that the *inteſtine* deſcends, before the veſſels, in a rupture. (*a*)

Of the *Teſtes*, *Epididymides*, *ſeminal ducts*, *Vaſa deferentia* and *Veſiculæ ſeminales*.

THE figure of the *Teſtes* is of a flattiſh oval; they are ſoft and glandular, and tubular with great tortuoſity, and are appointed to ſecrete and elaborate the *ſemen*; they are left very looſe and moveable in the *Scrotum*, by which means, they are much leſs liable to external injuries.—The *Epididymides* are vaſcular bodies, attached to the poſterior parts of the *Teſtes*, in which the ſeminal *ducts* unite, forming the *Vaſa deferentia*; which convey the *ſemen*, prepared by the *Teſtes*, to its reſervoirs, the *Veſiculæ ſeminales*, lying upon the inferior part of the *Bladder*, beyond the *proſtrate gland*. Shou'd theſe bodies, or their *ducts*, happen to be injured in *lithotomy*, the patient may be ſpoiled for the office of procreation.

ACCORDING

(*a*) See an extraordinary caſe of a *Circocele*, in my Caſes and Remarks in Surgery, requiring caſtration.

Cure of wounds of the *Teſtes*, &c.

ACCORDING to the nature, texture and ſenſibility of the *Teſtes*, and their appendages, the *Epididymides*, wounds in them are to be treated with great care and gentleneſs, obſerving general rules: and ſhou'd the *ſpermatic* cord be wounded, no particular management is required; but in wounds of the *Teſticles*, &c. the *ſcrotum* muſt always be ſupported with a bag-truſs; which ſhou'd not be omitted when only the cord is injured.

Remarks concerning the radical cure of the *Hydrops Tunicæ vaginalis*, and caſtration.

WHEN the radical cure of the *Hydrops Tunicæ vaginalis* is attempted, from what I have obſerved in patients of my own, as well as of others, I am fully convinced, that the beſt method is, to take out an oval piece by inciſion. And, in caſtration, from a great many examples, and ſtrict attention, I have not the leaſt doubt upon my mind, concerning the propriety of taking up only the *ſpermatic* artery, in order to obviate ſevere ſymptoms; which I have ſeen ariſe, beyond diſpute, in conſequence of tying the whole cord. Concerning both theſe operations, I have ſaid ſomething more in another

ther place, founded upon inconteſtible evidence. (*a*)

Of the *Penis.*

THE teguments of the *Penis* are a looſe ſkin, and *cellular* membrane without fat, like that of the *Scrotum*, which may alſo be inflated to a great degree by blowing air into it; and there is a reduplication, forming a kind of hood to the *Glans Penis*, called the *Prepuce*. The body of the *Penis* is made up of two *Corpora cavernoſa*, the *Corpus ſpongioſum Urethræ*, and two pair of muſcles, called the *Erectores Penis* and *Acceleratores Urinæ*. The *Corpora cavernoſa* ariſe diſtinctly from the *Oſſa Pub.* and *Iſch.* and at their origin, are called *Crura Penis*; theſe bodies are continued to the *Glans Penis*, and will admit of inflation. The *Corpus ſpongioſum* ſwells out at its beginning, making what is called the bulb of the *Urethra*, and at its termination, it makes the *Glans Penis*; along this body runs the *Urethra*, which is alſo of a ſpungy texture, vaſcular

(*a*) See my Caſes and Remarks in Surgery, the ſecond Edition.

vaſcular and glandular. The inſide of this canal is lined with a delicate membrane, pierced in many places, through its whole extent, by the excretory *ducts* of *glands* called *Lacunæ*; by which means it is conſtantly ſupplied and imbued with a viſcid fluid, or *mucus*, to defend it from the acrimony of the urine; and there are *lymphatics*, running from hence to the *Veſiculæ ſeminales*, which have lately been filled with quickſilver by Mr. *Watſon*, an ingenious Anatomiſt in *London*. The firſt pair of muſcles ariſe from the tuberoſities of the *Oſſa Iſch.* run in the direction of the *Crura Penis*, and are loſt upon the *aponeurotic* ſheath of the *Corpora cavernoſa*. The ſecond ariſe between the *Crura Penis* and ſoon join, making a tendinous ring round the *Urethra*; from thence they proceed to the *Sphincter Ani*, and are loſt in that muſcle. On the back of the *Penis*, between the *Corpora cavernoſa*, runs the *Vena Magna*, ſo called by modern Anatomiſts; and into each of theſe bodies enter an artery, vein and nerve, diſtributing their branches.

The treatment of wounds of the *Penis*.

WHEN we duly conſider the nature, ſtructure, and combination of the parts, compoſing the *Penis*, it muſt evidently appear, that deep wounds in it demand more attention than ordinary, though the general rules are to be obſerved in the treatment of them. (*a*)

The methods of making wounds into the *Urethra* when ſtones are lodged there.

WHEN a ſtone is lodged in the *Urethra*, and it is found neceſſary to cut upon it in order to extract it, the general method directed is, to make the wound laterally into that canal, firſt drawing up the ſkin, &c. of the *Penis* enough to be ſlipped down and cover over the other part of the wound, with a view of expediting the cure, and preventing a *Fiſtula* in conſequence of the operation; but this method ſeems more likely to cauſe, than obviate, inconveniences; as the urine may then be diffuſed in the *cellular* membrane, occaſioning inflammation, &c. and bring on the very evil, we are ſtudying to avoid: therefore it appears more eligible, to endeavour to make the

(*a*) Vid *Tractatum Regneri De Graaf, de Virorum Organis Generationi inſervientibus.*

the wound in the ſkin and *cellular* membrane correſpond with that in the *urethra*; keeping the lips of it together, with a ſtrip of common plaſter, having a ſlit in the middle to be uſed as the uniting bandage, after applying to the wound, a very thin even pledget of ſome vulnerary balſam, as directed in inciſed wounds. This method I have practiſed much to my ſatisfaction.

I HAVE divided the *Prepuce* ſeveral times in *Phimoſes*, without any ill accidents ſupervening; but I have been informed, by two very eminent Practitioners, who were eye-witneſſes of mortifications happening in conſequence of this ſeeming ſlight operation, in patients of cachectic habits; which diſaſtrous events ſhou'd admoniſh us to act with precaution.

Unhappy conſequences upon cutting the *Prepuce* in *Phimoſes*.

PREVIOUS to operations in Surgery, it is certainly a matter of the utmoſt importance, to rectify what is amiſs, in the patient's health and conſtitution, as far as poſſible: an inattention to theſe things, I am perſuaded, has frequently prevented ſucceſs attending operations, that have been well

Cautions of great importance to be attended to.

performed ; after which, the greateſt degree of circumſpection is alſo demanded, and ſometimes found abſolutely neceſſary, to obtain the propoſed end and deſign of them; and indeed this obſervance cannot be too earneſtly inculcated.

Of wounds of the Extremities.

HAVING gone through the treatment of wounds of the three cavities, &c. and, in the general hiſtory of them, conſidered thoſe of the teguments, muſcles, tendons, arteries, veins, lymphatics, nerves, &c. little is left to be ſaid concerning wounds of the extremities, but to recommend a good anatomical knowledge of the ſtructure, mechaniſm and uſe of theſe parts ; which, joined to the general rules laid down for the management of ſuch accidents, will prove a ſufficient direction, what meaſures to take, in the various kinds of them, however complicated.

Poſition of the limb to be obſerved.

WE muſt always remember, as has before been remarked, that whenever a muſcle

cle or tendon is divided, totally or partially, it is of great conſequence, to place the limb in a favourable poſition to relax it, that the undivided part may not be put upon the ſtretch, or the ends drawn more aſunder, which require to be kept, as near together as poſſible, when they cannot be kept quite in contact: and ſhou'd the future be practiſed in either of theſe caſes, it is neceſſary to give rather more attention to this circumſtance. Here I may juſt repeat the proper poſture to put the limb in, when the *Tendo Achillis* is wounded; which is effected by bending the knee and extending the foot, to ſuch a degree as leaves the part moſt at eaſe.

Wounds accompanied with fractures the moſt formidable.

THE moſt formidable wounds of the limbs, are thoſe accompanied with fractures of the bones; to which part of Surgery I have ſpoken ſufficiently, in a little work I printed a few years ago, now reprinted with additions, and ſee no manner of reaſon to alter my ſentiments, the ſame ſucceſs ſtill attending the ſame method.

Treatment of wounds of the joints.

ALL kinds of wounds of the joints require the gentleſt and mildeſt treatment and

applications, with the utmoſt care and attention to prevent pain, inflammation and fever, according to the rules we have had occaſion to mention repeatedly, in the courſe of this treatiſe: and probably the wrapping the whole part up at firſt, in a warm, emollient cataplaſm, renewing it as often as it grows cold, might prove the happy means of obviating bad accidents, in theſe threatening caſes.

Confinement to the bed to be injoined in wounds of the inferior extremities.

In a wound of a lower extremity, it is adviſable to confine the patient to his bed; and when in the joint, that injunction muſt be peremptorily inſiſted upon, keeping the limb as much at reſt, as in a luxation or fracture, in order to have the main intentions of cure more effectually anſwered: however, as ſoon as the part will bear gentle motion frequently, that will be requiſite, as a means of preventing an immobility of the joint.

Wounds of the joints very dangerous.

Wounds of the joints made either by puncture or inciſion, are of a very dangerous nature, as they are ſurrounded with tendinous and membranous parts; which though not very ſenſible in a ſound ſtate, as

we

we have obſerved; yet when inflamed, they become exquiſitely ſenſible, often attended with vehement pain and fever, and ſometimes with delirious ſymptoms and convulſions. The danger is ſtill increaſed, when the wound penetrates the *capſular* ligament; a caſe which may be diſcovered by the probe, and generally by a diſcharge of the *Synovia*, ſecreted by glands in the joint, to facilitate its motion; but as a diſcharge of a ſimilar kind may deceive our judgment, proceeding from wounds into the *Sacculi mucoſi*, which lie under the tendons of ſome long muſcles that play upon bones near, or over joints, furniſhing them with ſuch a lubricating fluid, to prevent the ill effects of friction, we ſhou'd be acquainted with the ſituation of theſe little membranous bags, that we may not immediately conclude the wound penetrates the joint, from the appearance of the fluid diſcharged, without farther conſideration. Wounds, that enter the joints, muſt be looked upon as much more dangerous than thoſe in which only theſe *Sacculi* or *Burſæ* are opened, and they will generally afford a larger ſynovial diſcharge.

When an atrophy follows a wound in a limb, with or without rigidity of the joint, nothing carries ſo much probability of giving relief as pumping at *Bath*; but, as a ſubſtitute, warm water may be poured upon it at home, in imitation of that; uſing good friction with a fleſh bruſh to the waſted, and emollient embrocations to the rigid parts, giving them gentle motions as early as they will admit of being moved, without creating much pain, as has been adviſed. The water for this purpoſe may eaſily be impregnated with warm plants, &c. giving it, in ſome degree, the virtues of the natural Baths.

I have inſerted the following liſt of the *Sacculi mucoſi*; it appearing of ſome conſequence, to diſtinguiſh whether the wound penetrates the joint, or only a *Sacculus* is opened; which conſideration I do not find has been paid any regard to, in reſpect to wounds contiguous to the joints, by any Writer in Surgery. (*a*)

In reſpect to wounds of the extremities and articulations, we may conſult *Glandorpius*, *Wiſeman*, *Paré*, *Foreſtus*, *Dodonæus*, *Placentinus*, &c. and *Hildanus's* diſſertation, *de Ichore*, among his other works, is well worth reading on this occaſion.

(*a*) Our great Maſter in Anatomy, Doctor *Hunter*, calls theſe little, fine membranous bags, *Sacculi mucoſi*, and the celebrated *Albinus*, *Burſæ mucoſæ*, in his *Hiſtoria Muſculorum*.——It is ſaid that *Bellini* firſt obſerved them.

A list of the *Sacculi mucosi*, with their situation and connection. They may be made very conspicuous by inflation.

1	*Deltoides.*	A large one situated under this muscle upon the *Acromion Scapulæ.*
2	*Biceps Brachii.*	A small one, investing the tubercle of the *Radius*, both on the side where the tendon is fixed, and also on the other side, where there is no tendon; it adheres strongly to the whole tubercle, and loosely to part of the *Supinator brevis*, under which it lies, as well as under the tendon of the *Biceps.*
3	*Iliacus internus* and *Psoas.*	A large thin and pliable one is found upon the *Ischium*, beneath the tendons of the *Iliacus internus* and *Psoas*, as they pass down to their insertions in the *Os Femoris*; it is attached to these tendons, and to the anterior surface of the *capsular* ligament; and this *Sacculus* sometimes communicates with the joint, as I have observed.
4	*Latissimus Dorsi* and *Teres Major.*	One is situated between the extremities of the tendons of these muscles, adhering strongly to them.
5	*Gluteus max.*	A large thin one, firmly connected by a small part of it to the back of the *Trochanter*, immediately under the termination of the *Gluteus medius*, and is loosely attached to the rest of the *Trochanter* and the tendon of the *Gluteus maximus.*
6	*Gluteus medius.*	A small one, situated between the termination of its tendon, and that of the *Pyriformis* adhering to both.

7 *Gluteus*

7	*Gluteus minim.*	A ſmall thin one, attached to its tendon and the *Trochanter major.*
8	*Gemini.*	A ſmall one between them and the termination of the *Obturator internus*, connected to both, and to that part of the *Capſula* of the joint, which lies under the *Gemini.*
9	*Biceps Cruris.*	One is ſituated between the end of its tendon exteriorly, and the *capſular* ligament of the knee, adhering to both.
10	*Semimembranoſus.*	A ſmall one lies between its tendon, which runs between the inner condyle of the *Tibia* and the *capſular* ligament of the joint.
11	*Cruralis & Vaſti.*	Behind the tendons of the *Cruralis* and *Vaſti*, there is a thin but large one, connected to thoſe tendons before they join; and after their junction, it is fixed to the *Patella*; it alſo adheres to the *Capſula* of the joint, that expands itſelf over the bone.
12	*Gracilis Sartorius & Semitendinoſus.*	Under the extremities of the tendons of theſe muſcles is a large one, adhering to them on one ſide, and on the other to the *capſular* ligament of the knee, on the inſide where theſe tendons play.
13	*Gemellus.*	A large one lies under its inner head, firmly attached to its tendinous origin, alſo to the extremity of the *Semitendinoſus* and the *Capſula* of the knee near the anterior condyle.
14	*Soleus.*	The tendon of the *Soleus* paſſes over the upper part of the *Os Calcis*, between which and the bone, lies a large *Sacculus*; and near that is found a glandular body, which furniſhes a mucous fluid for the more effectual lubrication of theſe parts, that are in ſuch conſtant motion in walking.

15	*Tibialis anticus.*	A ſmall one is fixed to the tendon a little before its termination, where it plays on the top of the foot.
16	*Peroneus longus.*	One lies under the tendon of this muſcle, where it plays over the *Os cunei forme* on the outſide of the foot.

MANY years ago, before I had any knowledge of theſe *Sacculi*, I was called to a young man, who had received a wound, with the bill of a wood-hook, on the inſide of his knee, juſt above the joint, whence proceeded a ſynovial diſcharge, which made me then apprehend it penetrated the *burſal* ligament; but the wound healing kindly, by the common treatment, without ill accidents ſupervening, I have ſince been inclined to think, upon reflection, that the weapon only penetrated one of theſe *Sacculi*, and not the joint. (*a*)

A caſe in which it is apprehended one of theſe *Sacculi* was opened, though at the time it happened, the wound was thought to penetrate the *burſal* ligament.

Of Gun-ſhot wounds.

SURGEONS of the greateſt abilities and experience having amply treated this ſubject, I ſhall be very brief upon it. GUN-

(*a*) Probably in theſe *Sacculi* diſorders may be ſeated deſerving future conſideration.

Of the nature and treatment of gun-ſhot wounds.

GUN-SHOT wounds are the moſt complicated, and to be conſidered as the worſt ſort of contuſed and lacerated wounds. Shou'd the external openings be ſmall, they require immediate enlargement; which, beſides anſwering other good purpoſes, gives room to extract extraneous bodies, as we have directed in the general treatment of wounds: and after the extraction of a ball or other ſolid body, we ought to be particularly careful in our ſearch, leſt any part of the garments, that may have been carried in with it, ſhou'd be left behind, which wou'd infallibly obſtruct the cure, and probably produce worſe ſymptoms, than even the ball itſelf: and, above all things, we ſhou'd endeavour to obtain free and depending openings. The management of theſe wounds differs in nothing material, from that which is proper, and has been adviſed, in other contuſed and lacerated wounds, obſerving the ſame general rules; only, as the digeſtion of the wound advances, and the contuſed and lacerated parts, that have loſt their vitality, by the force of the ball, ſeparate, (which is called the fall of the *eſchar*, a term early introduced, upon a ſuppoſition

of

of that ſlough being cauſed by burning) there is danger of an *hæmorrhage*, for obvious reaſons, which is a matter of ſuch importance as demands particular attention; and therefore, when ſuch a wound happens in a limb, the leaving a tourniquet ligature looſe about it, with directions to an attendant to uſe it occaſionally, till the Surgeon can be called, is a precaution that may prove the means of ſaving the patient's life.——— The applications ſhou'd be of the moſt lenient kind at firſt; and nothing, in all probability, wou'd contribute ſo much to prevent bad conſequences, when the limbs are thus wounded, as wrapping them up as ſoon as poſſible in a ſoft, emollient poultice, prepared with bread and milk, and having a good portion of oil in it, applying it moderately warm, to excite a pleaſing, not a painful ſenſation, renewing it as often as it grows cold: and, from a little experience I have had in theſe accidents, I think, the balſam mentioned in Pag. 144 is very ſuitable to dreſs the wounds with.—Bleeding, laxatives, and an exact regimen, are to be ſtrictly obſerved. The patient's conſtitution, ſtate of health before the accident, his cuſtomary

tomary way of living, the climate, and ſeaſon of the year are to be conſidered; and all the non-naturals duly regulated, as we have already mentioned, concerning the general treatment of wounds, in the firſt part of this treatiſe. But it too frequently happens in gun-ſhot wounds of the limbs, and more eſpecially when in the joints, that there is no reſource, but ſpeedy amputation, to preſerve the patient's life, before inflammation, fever, and a train of bad ſymptoms ſupervene. The method then of performing that dreadful operation, and the manner of dreſſing after it, which I have adviſed in remarks publiſhed ſome years ago, I cannot now help ſtrongly recommending and inculcating, from the conſtant ſucceſs which has attended it in my own practice, in a great number of inſtances: eſpecially too as other Surgeons, who have followed the ſame method, upon my recommendation, have given me the ſatisfaction of their full approbation of it. (*a*) Though the firſt dreſſings,

(*a*) See Caſes and practical Remarks in Surgery.—In many amputations which I have been concerned in within a few years, I have uſed a pair of diſſecting *forceps*, to take hold of the edges of the conſiderable arteries, that cou'd eaſily be come at, drawing them out a little

dreſſings, after amputation, ſhou'd not be removed, till they are ready of themſelves to fall off; yet, if the gleet proves offenſive, ſuch part of them, as can be eaſily taken away, ſhou'd by all means be removed, and clean proper dreſſings, ſo far, applied to the ſtump; in order to prevent that inconvenience, or the matter, which may have acquired a degree of acrimony, from excoriating the ſkin, &c.

Uſe of the *Bark* in wounds

In large contuſed and lacerated wounds, whether made by gun-ſhot or otherwiſe, after bleeding repeated as the urgency of the ſymptoms requires, and the nature and ſtrength of the patient's conſtitution will allow, with a due obſervance of the other neceſſary rules which have been mentioned, the *Bark*, if nothing contraindicates its uſe, may prove very beneficial; particularly when there is a tendency to mortification, in a patient whoſe ſolids are lax: under which circumſtance, it is moſt likely to prove efficacious, for ſelf-evident reaſons.—Shou'd it be thought proper to adminiſter a cordial remedy,

Moſt proper in thoſe whoſe *fibres* are lax.

The uſe of *camphire* recommended.

little way, juſt to give an opportunity of paſſing the needle, ſo as to include only a ſmall portion of *cellular* membrane in the ligature with the veſſel, in order to prevent its ſlipping off.

remedy, at the ſame time with the *Bark*, perhaps nothing can equal that which has *camphire* in its compoſition; and larger doſes of this very active drug, than are commonly given, may be ſafely ventured upon, on ſome occaſions.—The *Bark* has alſo a ſingular property in meliorating the ſuppuration, as well as in ſtopping a mortification, as experience has evinced, within a few years; and it has been preſcribed, to anſwer that very intention, by the moſt eminent Practitioners: indeed it may reaſonably be conceived to ſerve both purpoſes, upon the ſame ſuppoſed *Modus Operandi*.—It is often found of great advantage, to join *Rhubarb* in ſmall quantities with the *Bark*; which rational practice was firſt introduced upon Doctor *Mead's* authority, in order to prevent the inconveniences ariſing from coſtiveneſs in the uſe of it; a falſe notion prevailing before, that if it had not that effect, it wou'd not anſwer the propoſed end.

The *Bark* meliorates ſuppuration.

Rhubarb often very proper to be taken with the *Bark*, in ſmall quantities

The method which Mr. Serjeant *Ranby* has urged, with reſpect to the management of gun-ſhot wounds, in his treatiſe written after attending his late Majeſty in his *German* Expedition, being founded upon ratio-

nal

nal principles and ſupported by great experience, deſerves to have all due regard paid to it.—*Wiſeman*, *Heiſter* and *Le Dran*, and many diſſertations in 2d vol. of the *Mem. de l'Acad Roy. de Chirurgie*, are well worth reading on this ſubject.—*Monſ. Deſport's* treatiſe, upon this kind of wounds, bears a great character in the Hiſtory of the *Royal Academy of Surgery* at *Paris*, prefixed to the 3d vol. of the *Memoirs* of that reſpectable body; where it is alſo mentioned, that *Monſ. Louis* was about writing upon the ſame ſubject.--There is alſo an excellent diſſertation upon gun-ſhot wounds, by *Monſ. Le Cat*, an eminent Surgeon at *Rouen*, in the 1ſt vol. of the prize *Memoirs* of this Society. (*a*)

Of Burns.

Burns are of various kinds, proceeding from fire itſelf, or from other matter, fluid or ſolid, that is heated, melted or fuſed by fire, producing the ſame effect. When

(*a*) *Ambroiſe Paré* was a great Reformer of Surgery; he dreſſed gun-ſhot wounds more gently than any of his predeceſſors, whoſe applications were too ſevere and painful, having erroneous notions of the nature of ſuch wounds, from their appearances.

Difference between a burn and a ſcald in common acceptation.

WHEN the burn (or ſcald ſo termed if the effect proceeds from any hot liquor) is ſuperficial, only raiſing the *cuticle* in veſications, the frequent uſe of *Ol. Lini.* or *Ol. Olivar.* applied warm with a feather, and a plaſter of the *cerate* mentioned in Pag. 203, or ſome ſuch mild application over it, will generally be found ſufficient to anſwer the purpoſe; but when it penetrates deep, deſtroying the vitality of the vaſcular compages, and inducing an *eſchar*, then digeſtives are adviſable, to aſſiſt nature in the ſeparation of it; after which, the wound requires great care in the healing, by the common rules, in order to prevent deformity of the *cicatrix*, to which it is much more liable than other wound. Shou'd the fingers be burnt, plaſters muſt be applied in ſuch a manner as may hinder their coalition, which inconvenience will follow, if they are ſuffered to be in contact; ſome ſuch inſtances I have ſeen, thro' this inadvertence, which proved difficult to remedy. In ſome caſes, the hand-machine, deſcribed in my Caſes and Remarks in Surgery, may prove of conſiderable uſe, to give an opportunity of preſerving the flexion and extenſion of theſe parts; for want of which machine,

a piece of ſtiff paper may be formed, and adapted to the ſame purpoſe, with proper padding and bandage; which attention ſhou'd not be looked upon as trivial, conſidering the extenſive uſefulneſs of the fingers.

In caſe much pain and inflammation ſhou'd attend theſe accidents, veneſection, gentle purging, &c. with ſoft emollient cataplaſms, of bread, milk and oil, and ſuch applications, as directed in other wounds, muſt be uſed; and ſhou'd the pain become very ſevere, *opiates* muſt be given to aſſwage it. (*a*)

(*a*) See an extraordinary caſe, in my Caſes and Remarks in Surgery, of a burn by a fiery meteor.

The method of opening a dead body.

SURGEONS are often called on this occaſion, in order to inveſtigate the cauſe and ſeat of diſeaſes and death, either by the relations of the deceaſed, or the Magiſtrates of juſtice, to whom report is to be made; therefore at the time of performing this operation, minutes ſhou'd be taken of what is obſerved. Dexterity and neatneſs, in the performance of it, are of conſequence to the Surgeon; as the eyes of ſpectators are upon him, making their remarks.

Things neceſſary to be prepared on this occaſion.

THE inſtruments, and all things neceſſary, ſhou'd be diſpoſed in order, as for any other operation; as knives, a razor, a great and ſmall ſaw, ſciſſars ſtrait and curved, elevators, needles threaded, ſpunges, tow, ſaw-duſt or bran, baſons with water, towels and receivers for the *Viſcera*, when they are to be taken out of their cavities; and ſhou'd the body have undergone any degree of putrefaction making it offenſive, it will be right to have a mixture of lavender-water and vinegar, or ſome ſuch thing, to ſprinkle it with, &c.

THE

THE body is to be laid upon a ſuitable table, advantageouſly placed for the light, having a cloth thrown over the parts which decency demands ſhou'd be concealed, eſpecially in females.

Manner of opening the *Abdomen*.

WHEN it is intended only to inſpect the *Abdomen* and its contents, a longitudinal inciſion from the *xiphoid cartilage* to the *Os Pubis*, interſected by a tranſverſe one at the navel, will give a fair opportunity of anſwering theſe purpoſes, when the angles are reverſed.

The beſt method of diſſecting the ſcalp from the ſkull.

SHOU'D it be required to examine all the three cavities, and the parts contained in them, we are to begin by opening the head, making an inciſion quite croſs to the bone, from ear to ear; which ſection is preferable to the *crucial*, commonly made on this occaſion: then the ſcalp may be eaſily diſſected from the ſkull, and turned down over the face, and towards the neck, giving room for the ſaw. The head muſt be held very ſteadily by an aſſiſtant, during the ſawing, which ſhou'd be begun on the middle of the *frontal*, proceeding to each *temporal* bone, and ſo to finiſh the circle upon the

middle of the *occipital* bone, which may generally be done conveniently enough, by raiſing the head and inclining it forward, after having proceeded as far as this bone; or the body may then be turned prone, ſhou'd that poſture be found more convenient, to complete the circle. The cap of ſkull is then to be raiſed with the elevator, occaſionally cutting the *dura matral* adheſions: after this the *Encephalon* is to be removed, carefully ſeparating the other attachments of the *Dura Mater*.

The beſt way of opening the *Thorax* and *Abdomen* together.

In order to bring the *Thorax* and *Abdomen*, with the parts contained in theſe cavities, under one view, an inciſion is to be made on each ſide the *Sternum*, in the courſe of the *cartilages* of the ribs, which are annexed to it; diſſecting from thence the muſcles with the teguments, the ſpace of two or three inches towards the *ſpine*; then cutting through the *cartilages*, which will be ſeen, and eaſily divided with a kniſe a little curved near the point; then the inciſions are to be continued from the *Sternum*, through the *abdominal* cavity, in an oblique direction, to each *Ileon* or *Inguen*; after which the *clavicles* are to be ſeparated from the

the *Sternum*, or this bone divided at its ſuperior cartilaginous junction, with a ſtrong knife, diſſecting it from the *Mediaſtinum*, and turning it downwards with the muſcles, &c. of the *Abdomen*. This is the moſt eligible manner of opening theſe cavities, and gives an opportunity of ſewing them up, with a better appearance for any perſon's view afterwards. That kind of ſtitch called by ſempſtreſſes the herring-bone or a flat ſeam, as repreſented in the margin, though not mentioned by chirurgical writers, has a very pretty and neat effect upon theſe occaſions.

If it is propoſed to take out the *thoracic* and *abdominal Viſcera* together, for farther examination, the *Diaphragm* is firſt to be cut down to the *ſpine* on both ſides; then, to avoid being incommoded with blood, &c. two very ſtrong ligatures are to be paſſed round the *Œſophagus* and large blood-veſſels, in which the *Trachea* may be included; tying them ſtrait, and then dividing theſe parts between the ligatures: the ſame meaſures are to be taken in reſpect to the inferior veſſels, upon the *lumbar* region, a little above

The manner of taking out the *thoracic* and *abdominal viſcera* together.

above the bifurcation of the *Aorta*, including the *Vena cava*; and alſo upon the *Rectum*. After having obſerved theſe precautions, the *Viſcera*, with the *Diaphragm*, are to be removed, by a wary diſſection, all the way cloſe to the *ſpine*; and gently drawing them, at the ſame time, will greatly facilitate the ſeparation.

What is neceſſary to be done previouſly to taking out the *thoracic* and *abdominal viſcera* eparately.

WHEN the *thoracic* and *abdominal Viſcera* are to be taken out ſeparately, in the firſt caſe ligatures muſt be made as have been deſcribed upon the veſſels, &c. juſt above the *Diaphragm*, and in the other juſt below it, and upon the *Rectum*.

A caution of great conſequence to be obſerved.

SHOU'D we be called upon to perform this office, when the body is become very putrid, it will be abſolutely neceſſary to have ſuch parts of it well waſhed with warm vinegar and brandy, and then ſprinkled with lavender-water, or ſome ſuch odoriferous, antiputreſcent liquor before the examination, in order to correct the ſtench, and defend us againſt the noxious quality of the effluvia: a precaution, the neglect of which may be attended with very direful effects, and of which we have inſtances. I have lately

lately been concerned on two occaſions, where it appeared abſolutely neceſſary to uſe ſuch means as might prevent the like conſequences.

Of

Of Embalming dead bodies.

In the early ages of the world, the practice of embalming dead bodies was very common, particularly among the *Egyptians*, as we have obſerved in the introduction; but it has long been diſuſed in almoſt all countries, except for great Perſonages.

What I have principally to ſay on this head, which I thought might prove acceptable, was communicated to me ſome years ago, by a perſon of great character, and well acquainted with the modern practice of embalming in this kingdom.

After eviſceration, as has been directed in opening a dead body, and continuing the inciſion farther upwards, even into the mouth, and if practicable without cutting the ſkin of the neck, all the cavities are to

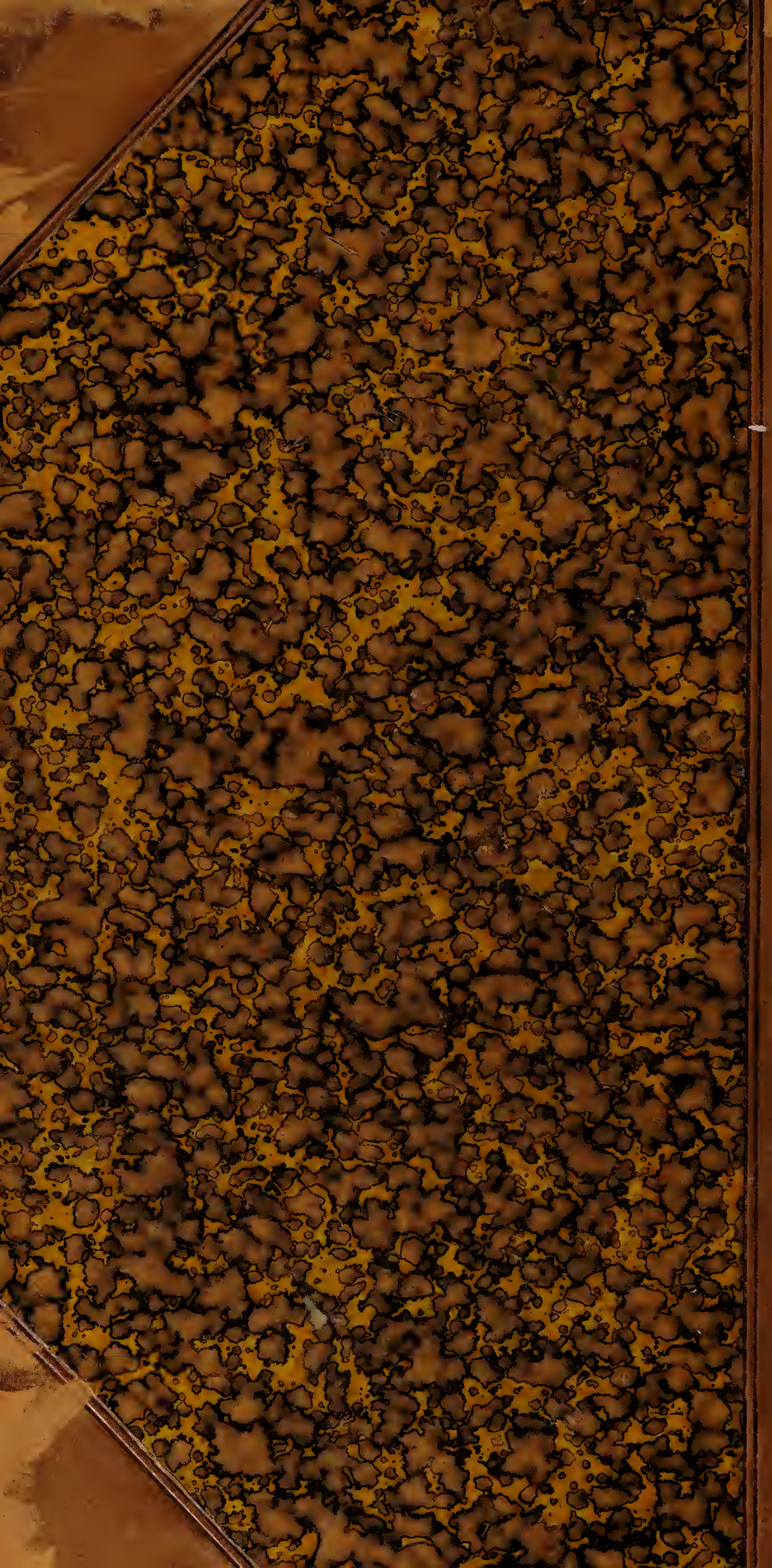
be

be well cleanſed, and the humidity ſucked up with ſponges, then waſhed with *Tinct. Myrrhæ*, and filled with a *ſpecies*, compounded of fragrant herbs, aromatic drugs, and gums reduced to powder, not very fine, firſt reſtoring the heart to its former reſidence, after having opened its ventricles, cleanſed and waſhed them with the tincture, ſtuffed them with the *ſpecies* and ſewed them up; and then the cavities are to be ſtitched very cloſe with the glover's or ſpiral future.—Large and deep inciſions are alſo to be made in all the moſt fleſhy parts, cleaning, and waſhing them with the tincture in the ſame manner, filling them with the antiſeptic *ſpecies*, and ſtitching them up.—Then the head, trunk, and limbs are to be perfectly well covered with cerecloth; putting a piece under the chin, to be ſecured by ſewing on the top of the head, after having well adjuſted the cap of the ſkull, ſewed the ſcalp together, and cleaned the mouth, as has been directed for the other parts, and putting in ſome of the *ſpecies*.——The cerecloth is to be prepared with a compoſition made of wax, roſin, ſtorax and painter's drying oil S. A. ——After the application of the cerecloth,

with great care and exactneſs, cut into ſuitable pieces, according to the reſpective parts, and cloſing them well every where; the face, being cloſe ſhaved, is to be covered with ſome of the above compoſition melted, and laid on with a bruſh of a proper degree of heat, and of a moderate thickneſs; which may have a faint fleſh color given it with vermillion, and when it is grown cold and ſtiff upon this part, it may be lightly ſtruck over with hard varniſh; or this varniſh, applied thick, may here ſerve the purpoſe alone.--A cap is to be well adapted to the head, falling down upon the neck and to be ſewed under the chin, making a few circular turns about the neck with a roller of a fit breadth.——All the reſt of the corpſe is to be incloſed in a ſheet, to be artfully cut, and ſewed on very cloſe and ſmooth, with the fineſt tape, and ſuch a ſeam as is deſcribed on the margin in Pag. 453; over which an appropriate dreſs is to be put, as the relations or friends think fit to direct and appoint; and then laid into the coffin, which ſhou'd be in readineſs: but when it is ſome great Perſonage, who is to lie in ſtate for public view, before the

the funeral rites are ſolemnized, the dreſs muſt be appropriated to his dignity and character.—The brain and other *Viſcera* are to be put, with ſome of the *ſpecies*, into a leaden box.——Sometimes the heart, prepared as has been directed, to preſerve it from putrefaction, is depoſited in an urn by itſelf. (*a*)

(*a*) See *Paré* and *Dionis* at the concluſion of his chirurgical operations, upon Embalming.——*Mr. Greenhill*, a very learned Surgeon, publiſhed in quarto, in the year 1705, the Art of Embalming, and the ſeveral ways of preſerving dead bodies, in moſt Nations of the World, with their funeral Rites and Ceremonies.

F I N I S.

W. H. H.
LIBRARY